

IOWA DEPARTMENT OF NATURAL RESOURCES

2005 – 2009 AERMOD Meteorological Data

Technical Support Document

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Introduction

This document serves as a technical discussion of the methodology used to process the 2005 – 2009 meteorological data for AERMOD. It focuses on those portions of the process that are not described in the AERMET user guide, or where the instructions in the AERMET user guide were expanded upon.

These topics include:

- Data acquisition
- Representivity analysis
- Filling missing data
- Use of AERMINUTE to process 1-minute wind data
- Land-use analysis
- Analysis of the expected change in AERMOD predictions as a result of using the new meteorological data

For a detailed description of the methodology used to process meteorological data using EPA's AERMET preprocessor, please refer to the AERMET user guide.

Data Acquisition

Meteorological Data - Surface

The surface meteorological data were obtained from the National Climatic Data Center (NCDC) (1). TD-3505, or Integrated Surface Hourly (ISH) data, was chosen because it is the newest, most comprehensive format available that is compatible with AERMET. This dataset was purchased from the NCDC's website on a series of five DVDs. Data were extracted from the DVDs for a total of 80 surface observation stations in and around Iowa.

Meteorological Data - Upper Air

The upper air data were obtained from the online National Oceanic and Atmospheric Association Earth System Research Laboratory (NOAA/ESRL) Radiosonde Database (2). The Forecast Systems Laboratory (FSL) format was chosen because it is the only format available from this website that is compatible with AERMET. This dataset was obtained as a series of text files. Data were obtained for a total of four upper-air observation stations in and around Iowa.

Meteorological Data - 1-Minute

The 1-minute wind data were obtained from the NCDC's online file transfer protocol (ftp) directory (3). The 1-minute data are divided into two datasets: 6405 and 6406. The 6405 dataset contains primarily wind data (4) whereas the 6406 dataset contains temperature, dewpoint, precipitation and pressure (5). The AERMINUTE preprocessor only uses the wind data, so only the 6405 dataset was downloaded. This dataset was obtained as a series of text files. Of the 80 surface observation stations, 1-minute data existed for 25 of them. The data were downloaded for each of these 25 stations.

Land Cover Data

Land cover data were obtained from the U.S Geological Survey's Seamless Data Warehouse (6). The land cover data are from the 1992 National Land Cover Dataset (NLCD 1992), and were obtained in GEOTIFF format because that is the format compatible with the AERSURFACE preprocessor.

Locations and Elevations

There is some uncertainty regarding the accuracy of the location information provided with Automated Surface Observing System (ASOS) data. It has been shown that the location provided for many of the ASOS stations can be off by several hundred meters or more (7) (8). This uncertainty necessitates an alternate method for determining the actual locations of these sites.

Online sources of aerial photography, such as Google Earth (9), Bing Maps (10) and the Iowa Geographic Map Server (11) were used to visually locate the instrument towers. Most ASOS sites near major cities are easily identifiable because these locations are generally covered by high-resolution photography. The tower is not as easily identifiable in lower resolution photographs, but the tower location at airports is consistently near the main runway(s). This knowledge was useful in deciphering which object in the low resolution photography could be the meteorological instrument tower. In a few cases, the actual location was confirmed via physical inspection of the site. The locations of the upper-air sites were based on the observed location of the rawinsonde balloon inflation shelter/radiotheodolite radome at

each site. The shelter and associated radome are easily identifiable in even low-resolution aerial photographs. Once each location was found visually, the coordinates and elevation of that location were determined using Google Earth. This data is summarized for each site in [Appendix A](#), along with a description of the confidence of the coordinates at each location.

The elevation above ground of the anemometer at each location was determined using the data available on the National Weather Service's (NWS) website (12).

Representivity Analysis

A representivity analysis was conducted in preparation for the processing of new meteorological data for use in the AERMOD dispersion model. The analysis was conducted in order to determine which surface and upper air measurement sites should represent the various areas of the state, and was conducted prior to processing the data for AERMOD. As such, the results of this analysis were also utilized as a guide when making decisions related to filling missing data.

As stated in the Guideline on Air Quality Models “the meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern” (13). Furthermore, representativeness has been defined as “the extent to which a set of measurements taken in a space-time domain reflects the actual conditions in the same or different space-time domain taken on a scale appropriate for a specific application” (14). In other words, the goal of the meteorological data set used in a model such as AERMOD, is to provide a statistically suitable sample of the range of meteorological conditions that could occur within the modeling domain, and the frequency with which they tend to occur. The representivity of meteorological data is influenced by the following (13):

- Exposure of the instruments at the meteorological monitoring site
- Temporal proximity to the period being modeled
- Geographic features and land cover in the vicinity of the meteorological monitoring site
- Spatial proximity to the area being modeled

More detail on each of these items follows.

Instrument Exposure

Instrument exposure refers to the ability of the instruments to measure meteorological conditions without the influence of manmade or natural obstructions. If obstructions are present, they can influence the measurements of the meteorological monitoring site. For example, a tree located a few dozen feet away from an instrument tower could alter the speed and direction of the wind at the instrument. These effects may be useful in defining the microscale atmospheric conditions in the immediate vicinity of the obstruction, but would be inappropriate if applied over an entire modeling domain. As such any instrument affected by such local-scale influences should not be used to develop meteorological data for use in a dispersion model.

All surface stations used in the development of the 2005 – 2009 AERMOD meteorological data were ASOS, and all are located at airports in and around Iowa. Airport-based ASOS stations are purposely sited with good exposure so that they may provide accurate weather information for the aviation community. It is stated that “the NWS will follow the guidelines documented in the Federal Standard for Siting Meteorological Sensors at Airports” when siting ASOS stations (15). These standards include siting and exposure requirements that limit the effects of any obstructions within 1000 feet of the

anemometer (16). For these reasons it was determined that instrument exposure would not affect the representativeness of any data obtained from airport-based ASOS stations.

Instrument exposure is not a concern with upper air data because the observations occur above the surface of the earth, away from any obstructions that could affect them.

Temporal Proximity

“Consecutive years from the most recent, readily available 5-year period are preferred” for use with regulatory air dispersion modeling analyses (13). At the time that these data were obtained, 2009 was the most recent year available. Therefore the years 2005 – 2009 were used in the processing of the AERMOD meteorological data sets. The data observed at all surface and upper air stations were considered temporally representative of all locations in Iowa for the purposes of this analysis.

Geographic Features, Land Cover and Spatial Proximity

An objective technique using wind roses as a surrogate for the effects of local geographic features and land cover was developed to determine the best meteorological data to represent the various areas of the state. The premise of this technique is that similar wind roses from different locations are an indication that both sites are influenced by the same or similar conditions. Conditions which are attributable to both the mesoscale flow in the area, and the geographic features and land cover in the vicinity of each observation site.

When the wind fields observed at a significant number of sites are compared to one another, patterns emerge from the data that reveal clues about the geographic features and land cover at each site. For instance, the main components of wind direction at a site that is located within a river valley may be aligned with the direction of the river valley instead of the predominant wind directions seen at a nearby site that is not within the valley. Similarly, due to the higher surface roughness, the average wind speed observed at a site surrounded by forests may be lower than the wind speed observed at a site surrounded by grassland. Taking these examples a step further, the geographic features and land use that exist in the various directions around the measurement site will affect the shape and magnitude of those corresponding portions of the wind rose for that site. Thusly, assuming no differences in overlying mesoscale conditions and adequate instrument exposure, it can be concluded that two sites whose wind roses are similar either have similar surrounding geographic features and land cover, or the geographic features and land cover surrounding both sites have little or similar effect. In either case the meteorological observations made at one site would be considered representative of the other site.

Correlating Observations between Different Measurement Sites

Before the similarity of the wind roses can be determined it is first necessary to collect data from a large enough number of locations to provide adequate horizontal resolution of the wind patterns in the state. Ideally, there should be at least one observation site in each area for which representativeness will be determined. Historically, representativeness has been determined at the county level with the boundaries of the representative areas being defined by the county borders. Unfortunately, there is not

a meteorological station located in every county in Iowa, so the focus was placed on finding the largest number of sites where data are collected in as similar a fashion as possible. This provided a reasonably large sample while also minimizing biases caused by siting or data collection differences. ASOS and Automated Weather Observing System (AWOS) sites are conveniently similar in both data availability and siting criteria. Therefore, wind roses were created for a total of 80 ASOS and AWOS sites in and around Iowa using Trinity Consultants' BREEZE MetView program (17) (see example in Table 1).

Table 1. Example Joint Frequency Table of wind direction and wind speed

Dir \ Spd	≤ 3knots	≤ 6 knots	≤ 10 knots	≤ 16 knots	≤ 21 knots	> 21 knots	Total
0.0	0.14 %	0.27 %	0.91 %	0.67 %	0.10 %	0.03 %	2.12 %
10.0	0.12 %	0.38 %	0.89 %	0.49 %	0.10 %	0.00 %	1.98 %
20.0	0.14 %	0.34 %	0.93 %	0.37 %	0.04 %	0.00 %	1.82 %
30.0	0.11 %	0.30 %	0.64 %	0.30 %	0.03 %	0.00 %	1.38 %
40.0	0.12 %	0.27 %	0.35 %	0.15 %	0.01 %	0.00 %	0.91 %
50.0	0.11 %	0.20 %	0.46 %	0.15 %	0.02 %	0.01 %	0.94 %
60.0	0.09 %	0.21 %	0.38 %	0.13 %	0.02 %	0.00 %	0.83 %
70.0	0.09 %	0.18 %	0.40 %	0.13 %	0.03 %	0.00 %	0.83 %
80.0	0.08 %	0.19 %	0.40 %	0.12 %	0.03 %	0.00 %	0.82 %
90.0	0.09 %	0.19 %	0.41 %	0.13 %	0.02 %	0.00 %	0.84 %
100.0	0.12 %	0.24 %	0.50 %	0.17 %	0.01 %	0.00 %	1.05 %
110.0	0.11 %	0.29 %	0.52 %	0.17 %	0.02 %	0.00 %	1.10 %
120.0	0.10 %	0.29 %	0.65 %	0.28 %	0.03 %	0.02 %	1.37 %
130.0	0.13 %	0.26 %	0.60 %	0.31 %	0.08 %	0.01 %	1.39 %
140.0	0.18 %	0.39 %	0.79 %	0.38 %	0.05 %	0.00 %	1.79 %
150.0	0.24 %	0.48 %	0.86 %	0.24 %	0.02 %	0.00 %	1.83 %
160.0	0.29 %	0.51 %	0.93 %	0.37 %	0.08 %	0.00 %	2.19 %
170.0	0.29 %	0.58 %	1.48 %	0.77 %	0.12 %	0.00 %	3.24 %
180.0	0.29 %	0.63 %	1.64 %	0.80 %	0.13 %	0.02 %	3.51 %
190.0	0.20 %	0.52 %	1.77 %	1.24 %	0.26 %	0.05 %	4.04 %
200.0	0.16 %	0.49 %	1.66 %	1.02 %	0.18 %	0.04 %	3.54 %
210.0	0.11 %	0.31 %	1.05 %	0.70 %	0.10 %	0.01 %	2.28 %
220.0	0.09 %	0.22 %	0.52 %	0.17 %	0.01 %	0.00 %	1.03 %
230.0	0.11 %	0.27 %	0.56 %	0.24 %	0.04 %	0.01 %	1.23 %
240.0	0.15 %	0.24 %	0.40 %	0.14 %	0.02 %	0.00 %	0.96 %
250.0	0.21 %	0.40 %	0.53 %	0.11 %	0.01 %	0.00 %	1.26 %
260.0	0.18 %	0.36 %	0.37 %	0.09 %	0.01 %	0.00 %	1.00 %
270.0	0.14 %	0.19 %	0.24 %	0.04 %	0.00 %	0.00 %	0.62 %
280.0	0.13 %	0.25 %	0.37 %	0.05 %	0.00 %	0.00 %	0.80 %
290.0	0.19 %	0.43 %	0.76 %	0.19 %	0.02 %	0.00 %	1.59 %
300.0	0.22 %	0.50 %	0.99 %	0.35 %	0.03 %	0.00 %	2.09 %
310.0	0.21 %	0.61 %	1.26 %	0.57 %	0.04 %	0.00 %	2.70 %
320.0	0.25 %	0.63 %	1.36 %	0.80 %	0.12 %	0.02 %	3.18 %
330.0	0.23 %	0.62 %	1.62 %	1.22 %	0.26 %	0.04 %	4.00 %
340.0	0.18 %	0.42 %	1.15 %	0.97 %	0.19 %	0.03 %	2.95 %
350.0	0.11 %	0.23 %	0.99 %	0.91 %	0.18 %	0.03 %	2.45 %
Total	5.71 %	12.90 %	29.34 %	14.95 %	2.40 %	0.34 %	65.64 %
Calms							20.19 %
Missing							14.17 %
Total							100.00 %

To avoid introducing biases, all wind roses were created from the raw ISH data for each site without filling gaps with data from surrounding locations. The wind roses were created using the joint frequency distribution of the wind data at each location. Table 1 depicts an example of wind rose joint frequency data for one location. The wind directions are shown along the vertical axis and the wind speeds (knots) along the horizontal axis. The values shown within the body of the table are the percentages of time that the wind was observed for each combination of wind direction and speed at that location. The

similarity of each pair of wind roses was determined by calculating the correlation coefficient of the joint frequency data outlined in red from the corresponding table for each site. A higher correlation indicates the wind roses are more similar in both shape and magnitude (frequency of wind direction and wind speed), whereas a lower correlation indicates they are more dissimilar.

For example, the wind roses from Charles City, IA (Figure 1) and Oelwein, IA (Figure 2) are very similar, and have a correlation coefficient of 0.974.

Figure 1. Wind Rose for Charles City, IA (KCCY)

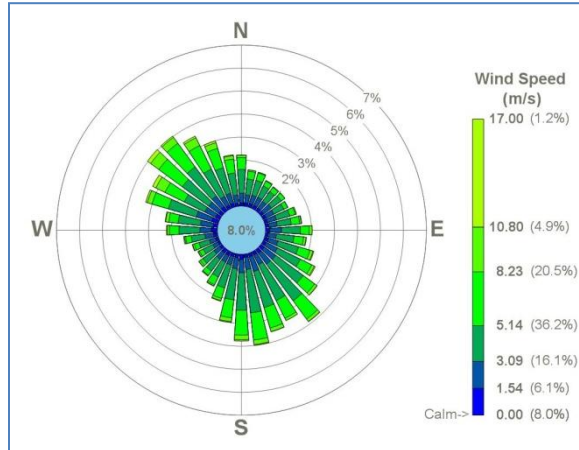
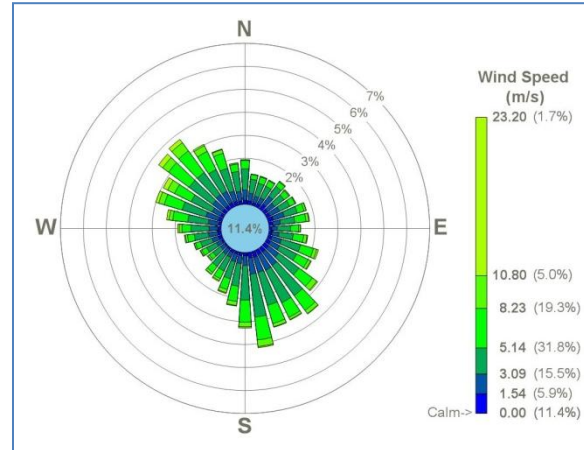


Figure 2. Wind Rose for Oelwein, IA (KOLZ)



On the other hand, the wind roses from Omaha, NE (Figure 3) and Boscobel, WI (Figure 4) are very dissimilar, and have a correlation coefficient of 0.062.

Figure 3. Wind Rose for Omaha, NE (KOMA)

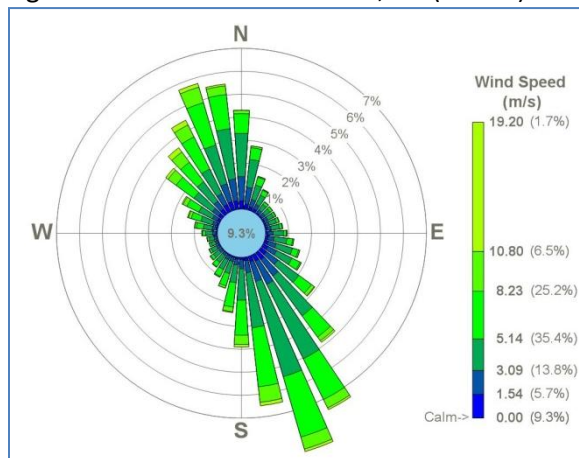
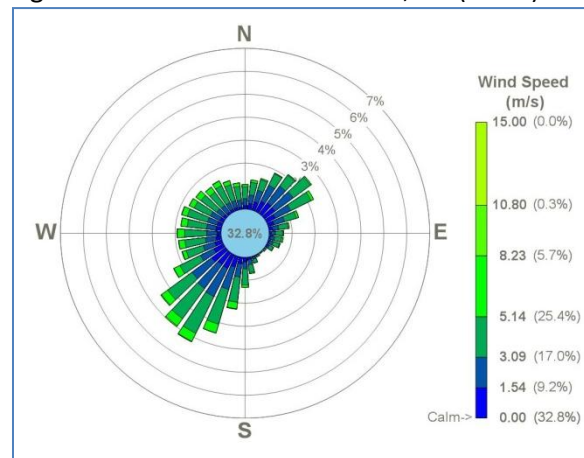


Figure 4. Wind Rose for Boscobel, WI (KOV5)



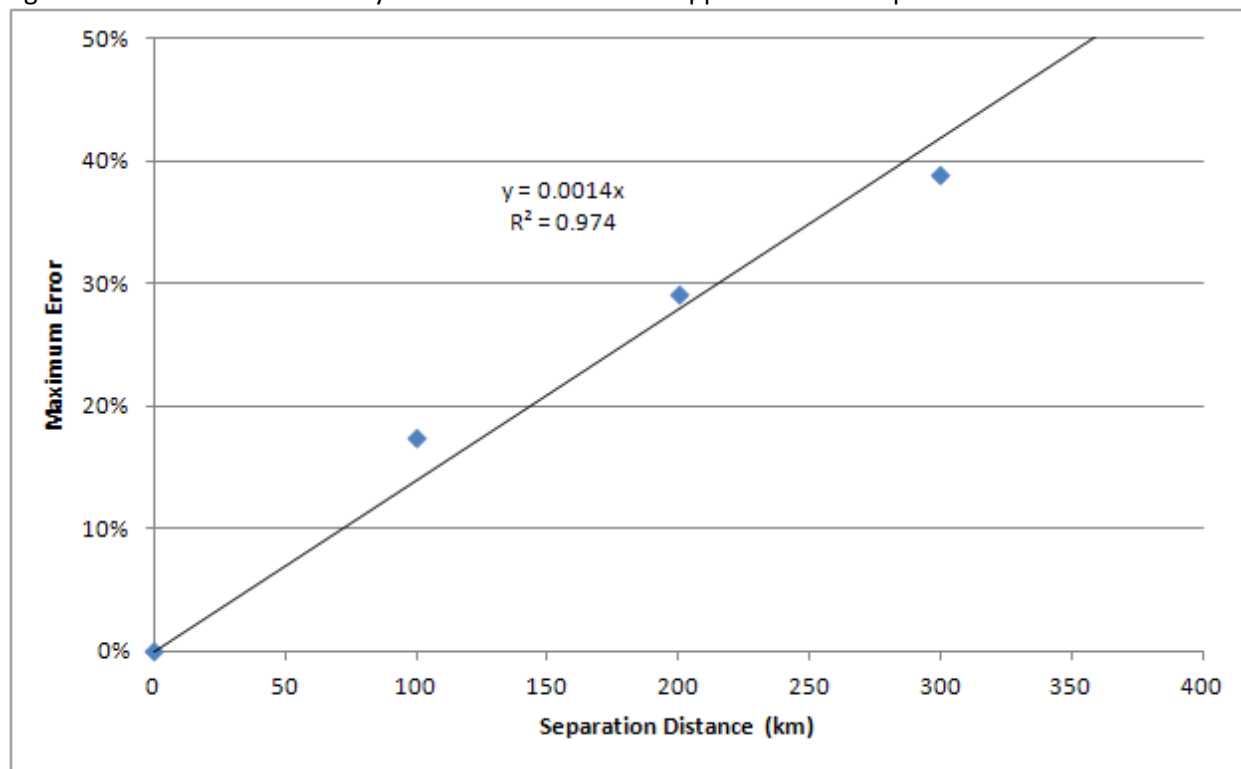
Generally, correlation coefficients of 0.9 or higher were observed when two wind roses were very similar and 0.8 or higher when only mild differences were observed between two wind roses. The differences between wind roses became more evident when the correlation coefficient was less than 0.8. For these reasons, 0.9 and 0.8 were chosen as thresholds to indicate ideal and good similarity respectively. These criteria were then used as a baseline for the remainder of this analysis. The wind roses for all sites used in this analysis can be found in [Appendix A](#).

Determining the Effect of Separation Distance on Representivity

To account for spatial proximity, it was decided to apply a distance-weighted scaling factor to the wind correlation coefficient. Doing so serves to account for the potential differences caused purely by the distance between two points in the overlying mesoscale conditions, such as temperature, pressure, cloud cover, etc (i.e. the closer two sites are to each other, the more likely they are to experience the same conditions), as well as the differences in solar angle. It is difficult to correlate distance with variations in mesoscale conditions beyond the typical definition of mesoscale meteorology: “features with horizontal dimensions ranging from a few tens of kilometers up to a few hundred kilometers” (18). Fortunately, the effect of the difference in solar angle on model concentration can be determined relatively easily.

A sensitivity analysis focused on the effects of separation distance on solar angle and elevation was conducted using a series of buoyant and non-buoyant point sources, volume sources and area sources at heights varying between 0 meters and 65 meters above ground. The analysis was conducted for 1-hour, 24-hour and annual averaging periods. The analysis was centered on Des Moines, IA and the separation distance was varied in 100-km increments between 0 and 300 km in each of the cardinal directions. Meteorology from Des Moines for the year 2000 was used. The percentage error in maximum concentration for each source, averaging period, and distance combination was calculated with respect to a site in the center of the domain. The maximum of the absolute value of the errors was then determined for each separation distance (Figure 5).

Figure 5. Model Error Caused by Measurement Site and Application Site Separation Distance



The results of the analysis indicated that a line with a slope of 0.14% error per kilometer provides the best linear fit when forced to intercept the axis at (0,0). It is desirable for the line to intercept at (0,0) because two sites that are collocated should be perfectly correlated, and therefore the error should be zero. In order to apply the scaling factor to the wind correlation coefficients, an upper limit of error must also be selected. For this application a limit of 50% was chosen because it coincides with the 2:1 model validation criteria normally cited for dispersion models. Based on this approximation, a meteorological site would need to be separated from the application site by 357 kilometers before causing a potential model error of 50% or more based solely on the spatial proximity of the two sites (50% error divided by 0.14% per kilometer). Ideally, this distance falls within the bounds of the definition of mesoscale meteorology. As such, these data should also serve to approximate the maximum distance at which the overlying mesoscale conditions at two separated locations would be more likely to be similar.

NOTE: After this sensitivity analysis was conducted a new version of AERMET (dated 11059) was released. The requirement to input the location of the application site was removed from this latest version of AERMET. The model change bulletin indicates that the separation of the measurement and application sites does not have a meaningful effect on the model result (19). As can be seen by these results, the separation distance does have an effect, but without further guidance from EPA it is unclear at what point these differences become meaningful. Presumably though, the evaluation of spatial proximity in a representivity analysis should reduce the potential separation distance and therefore the likelihood of an effect on model results (meaningful or not). Due to the agreement between the 357 km threshold determined using this analysis and the definition of mesoscale meteorology, it was decided to maintain the use of the linear regression derived from this analysis. Future work in this area may include refinements to this analysis with a focus on the extent of mesoscale conditions instead of the effect of solar angle.

The relationship between error and separation distance was then converted into a function that could be used to apply a distance-weighted scaling factor to each wind correlation coefficient. This function was developed in such a way that the resulting scaling factor would not modify the wind correlation coefficient when there was no separation error, and would reduce the wind correlation coefficient between two perfectly correlated sites to the minimum correlation considered a good fit (0.8) when the distance separating them would result in a potential error equal to 50%.

This was accomplished using Equation 1:

$$(1) \quad Q = 1 - \alpha E_D$$

Where: Q = Distance-weighted scaling factor
 α = Threshold-dependant constant
 E_D = Separation distance error (% expressed as a decimal)

To find α , substitute the distance-weighted scalar ($Q = 0.8$) that is desired at the farthest separation distance that the two sites are still considered representative of each other, and the corresponding separation error ($E_D = 0.5$) used to define that maximum separation distance. The result of this calculation indicates that the appropriate value for the threshold-dependant constant is 0.4. Substituting the formula for the separation distance error regression line described above, Equation 1 becomes:

$$(2) \quad Q = 1 - 0.4(0.0014x)$$

Where: $Q =$ Distance-weighted scaling factor
 $x =$ Separation distance (km)

Applying Equation 2 to the correlation coefficients of every pair of wind roses results in a distance-weighted correlation coefficient. Using two perfectly correlated (correlation coefficient = 1.0) wind roses as an example:

- If the wind roses are from collocated sites ($x=0$), Equation 2 becomes:

$$Q = 1 - 0.4(0.0014 * 0) = 1 - 0 = \underline{1}$$

The correlation coefficient (1.0) for the two identical wind roses from collocated sites would be multiplied by 1, and therefore remain perfectly correlated (1.0).

- If the wind roses are from sites separated by 357 kilometers ($x = 357$), Equation 2 becomes:

$$Q = 1 - 0.4(0.0014 * 357) \approx 1 - 0.4(0.5) = 1 - 0.2 = \underline{0.8}$$

The correlation coefficient (1.0) for the two identical wind roses from sites separated by a distance of 357 kilometers would be multiplied by 0.8, and therefore be reduced to the minimum correlation previously defined as being a good fit (0.8).

A distance-weighting factor was calculated as described above for every possible combination of measurement sites, and then applied to the corresponding correlation coefficients for those combinations. Using Golden Software's Surfer program (20), these distance-weighted correlation coefficients were then plotted on a map of Iowa using the 0.9 and 0.8 thresholds to depict the areas of the state that are well represented by each meteorological station. These plots are available for all sites used in this analysis in [Appendix A](#).

Selection of AERMOD Meteorological Sites

For various reasons, only a portion of the 80 sites for which wind roses were created could be used to process data for use in AERMOD. The following factors were considered when determining which of the sites would be further analyzed for use in the model:

- Existence of concurrent 1-minute data.

- Fulfillment of the 90% data completeness criterion.
- Correlation of the wind roses.

A summary of these criteria are available for all sites used in this analysis in [Appendix A](#).

Of the 80 sites, 1-minute data were available for 25 of them. Given the recent enhancements to AERMET it is desirable to use the more refined hourly average wind speeds and directions provided by the AERMINUTE preprocessor. Of those 25 sites, one was eliminated due to data completeness issues (KTQE) and five were eliminated due to insufficient correlation with other sites (KOV, KIRK, KUIN, KRST and KSTJ). The later five sites are either located farther away from Iowa than other equally or more representative stations, or are located in areas containing geographic and/or land cover features that prevent them from representing any portions of Iowa. The remaining 19 sites were determined to be those for which data would be processed for use in AERMOD (see Table 2).

Table 2. Surface Stations Used to Process Data for AERMOD

Station	Call Sign
Ames, IA	KAMW
Burlington, IA	KBRL
Cedar Rapids, IA	KCID
Davenport, IA	KDVN
Des Moines, IA	KDSM
Dubuque, IA	KDBQ
Estherville, IA	KEST
Iowa City, IA	KIOW
La Crosse, WI	KLSE
Lamoni, IA	KLWD
Marshalltown, IA	KMIW
Mason City, IA	KMCW
Moline, IA	KMLI
Omaha, NE	KOMA
Ottumwa, IA	KOTM
Sioux City, IA	KSUX
Sioux Falls, SD	KFSD
Spencer, IA	KSPW
Waterloo, IA	KALO

Determination of the Areas Represented by Each Meteorological Site

The final step in the process was to use the distance-weighted correlation coefficients to determine those portions of the state for which each meteorological station listed in Table 2 is representative. Traditionally, county borders have been used as convenient boundaries that can be easily referenced to determine which meteorological dataset to use for various areas of the state. However, the refinements included in this analysis have revealed areas of the state where meteorological representivity may vary within a county, specifically: areas affected by portions of the Missouri and Mississippi River valleys. Figure 3 provides an example of such an area.

The Omaha, NE meteorological measurement site is located within the Missouri River valley. Its wind rose is most correlated with the wind rose from Tekamah, NE, which is also located in the Missouri River valley approximately 50 km N-NW, but is far less correlated with the wind rose from Council Bluffs, IA, which is located on the bluff above the Missouri River valley only 8 km to the East (even with the distance-weighting applied). This is an obvious indication that the Missouri River valley is having an effect on the overlying mesoscale flow along this stretch of the river. Similar effects can be seen along the remainder of the Missouri River valley bordering Iowa, and along the stretch of the Mississippi River valley between La Crosse, WI and Moline, IL.

The majority of those portions of the Missouri and Mississippi rivers that border Iowa consist of relatively flat flood plains or sections of the river itself bordered by a relatively abrupt rise in elevation. The sharp contrast between the flood plains or river and the bluffs surrounding them are convenient boundaries to use to divide these areas. The affected counties were subdivided in this way, resulting in both county and valley boundaries.

In order to determine which areas of the state would be represented by each meteorological site the distance-weighted correlation coefficient data were input into Golden Software's Surfer program (20). Using this program, a grid was placed across the entire state with grid nodes in the center of each county and along the Missouri and Mississippi Rivers at the midway point along each county boundary that borders those rivers. Surfer was then used to calculate the distance-weighted correlation coefficient at each grid point for each meteorological site listed in Table 2.

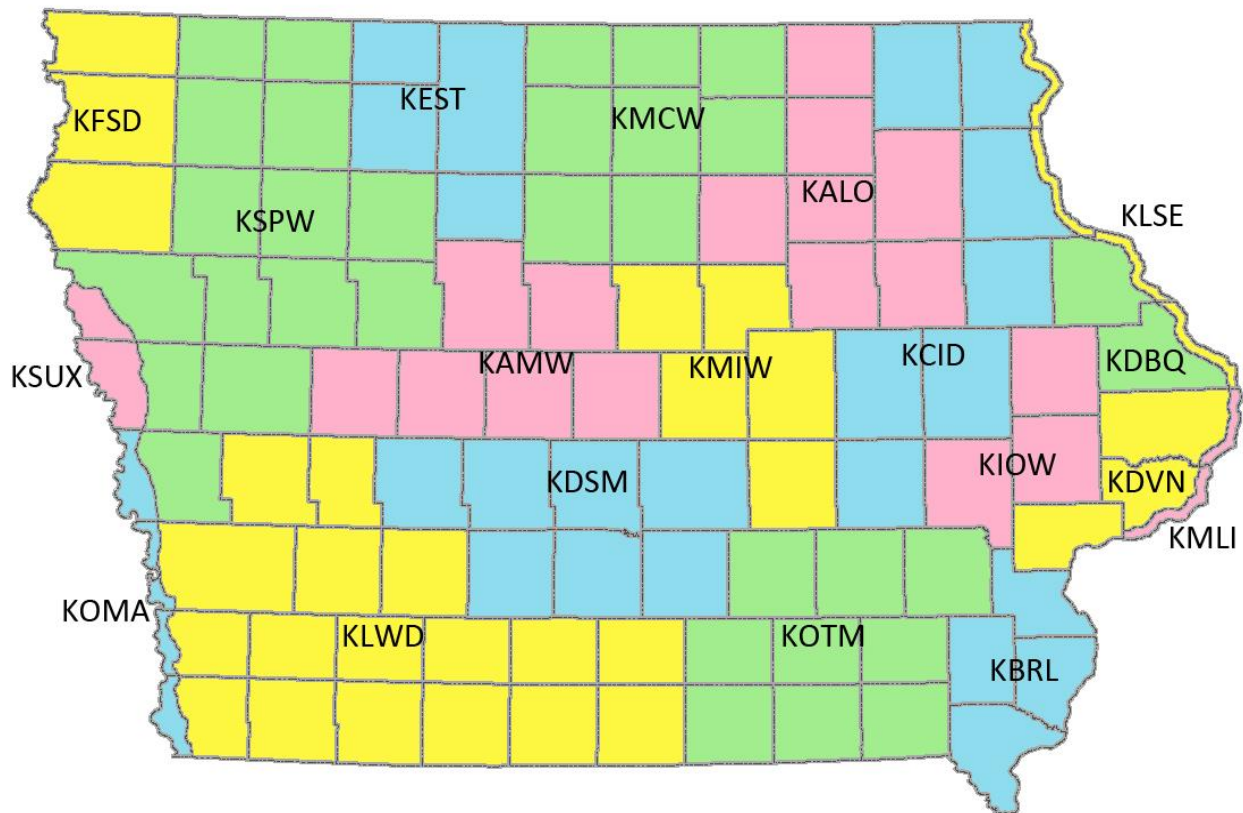
In most cases, the meteorological site with the highest distance-weighted correlation coefficient at each grid point was then assigned as the most representative site for that county or stretch of river valley. In some cases there were two or more meteorological sites that were estimated to be similarly representative. When this occurred the chosen site was often the location that would prevent a meteorological site from representing multiple non-contiguous areas of the state. In those areas of the state where counties were subdivided into valley and non-valley areas, only sites within the valley were considered for areas within the valley, and sites within the valley were never considered for areas outside the valley. The resulting representative areas are depicted in Figure 6.

There are many areas of the state where the representative meteorological station has changed from what was used in the past. Of particular note is the use of the Iowa City (KIOW) data for areas outside of the Iowa River valley. Previously, the Iowa City meteorological data was only used for the University of Iowa campus, which is largely located within the Iowa River valley. Unlike what is seen along portions of the much larger Missouri and Mississippi River valleys, this is an area of the state where the correlation data does not indicate an obvious influence from the river valley. Therefore, it was decided to use the Iowa City data to represent areas outside of the Cedar River valley.

Many of the other changes to the representative areas are simply due to the addition of nine new meteorological stations (including Iowa City). The effect of the additional meteorological stations is that the extent of the area represented by each has generally decreased. This is beneficial because it

increases the representativeness due to the spatial proximity between the meteorological station and modeling domain.

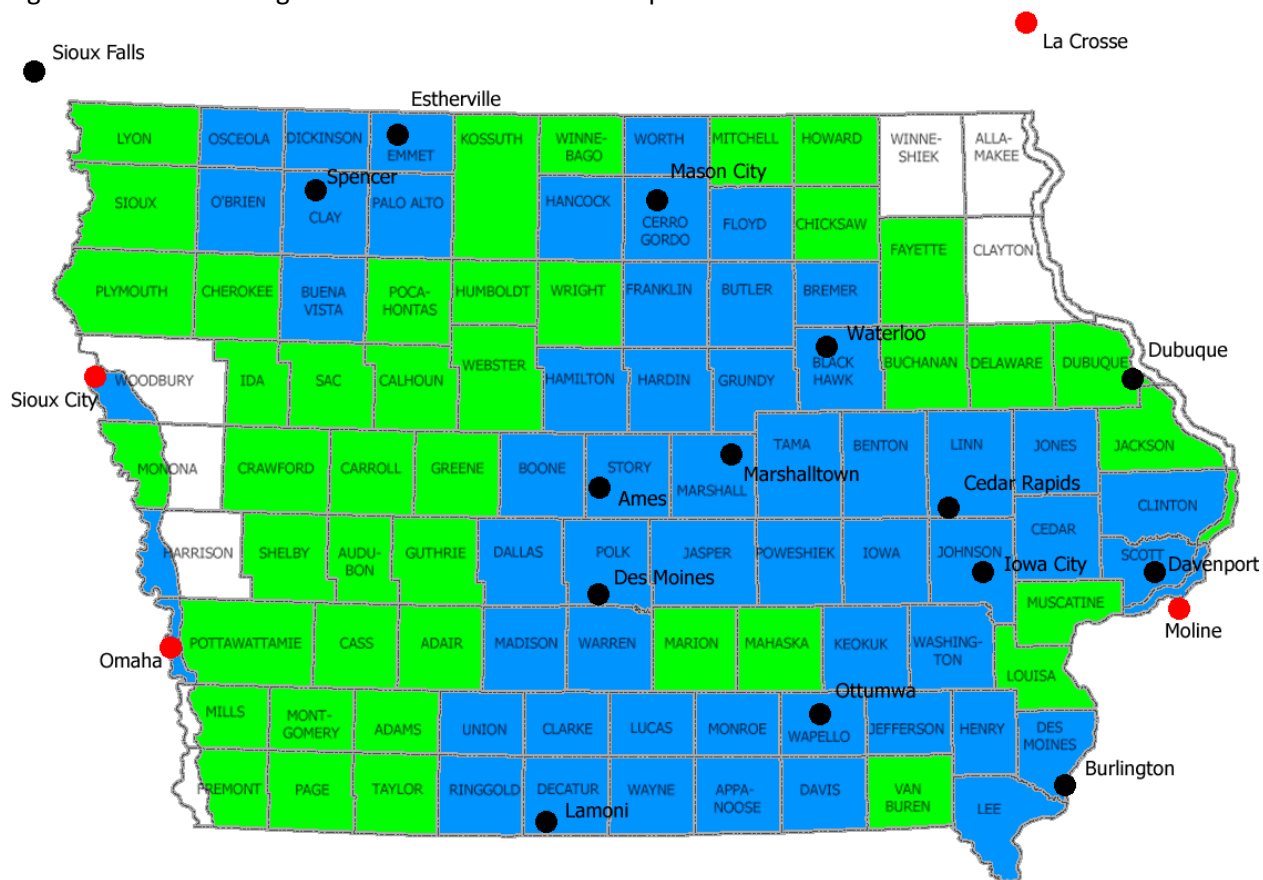
Figure 6. Representative Areas for the 2005 – 2009 AERMOD Meteorological Dataset



As noted above, for those counties that were subdivided into valley and non-valley areas, the edge of the flood plain defines the border of the corresponding representative area. For areas on the map where the county is subdivided, a modeling analysis with sources located within the floodplain would use the meteorological data from the subdivision representing the river valley in that area, and an analysis with sources located anywhere other than the floodplain would use the meteorological data from the subdivision representing the remainder of the county. The abrupt increase in elevation adjacent to the floodplain used to define the boundary can be determined by inspecting topographic maps of the area.

The distance-weighted correlation coefficient of the chosen representative site for each area is depicted in Figure 7. Areas where the distance-weighted correlation is 0.9 or greater are shaded in blue. Areas where the distance-weighted correlation is 0.8 or greater, but less than 0.9 are shaded in green. Areas where the distance weighted correlation is less than 0.8 are not shaded. The red dots represent the valley-based meteorological stations used to represent the portions of the Missouri and Mississippi River valleys where the wind patterns are significantly affected by those valleys, and the black dots represent the remaining meteorological stations.

Figure 7. Distance-Weighted Correlation of Chosen Representative Sites



As shown by the map, approximately 95% of the state is represented by a meteorological station that is either ideally or well correlated (distance-weighted correlation coefficient greater than 0.9 or 0.8 respectively). Only about 5% is represented by less-correlated meteorological stations. This is mainly due to a lack of data in these areas of the state.

There is a significant gap in available meteorological stations in the Western third of the state, with the only available sites being Omaha and Sioux City (both of which are influenced by the Missouri River valley). This necessitated the use of Spencer data for the non-Missouri River valley portions of Harrison, Monona and Woodbury counties. These areas are separated by a significant distance from Spencer and as such the distance-weighted correlation coefficient is reduced. The conversion of any of the existing AWOS sites in this area (Atlantic, Audubon, Carroll, Denison or Harlan) to ASOS with available 1-minute data would be an ideal solution to this problem.

Another area of low correlation in the Western part of the state is the Missouri River valley portions of Fremont and Mills counties. The cause of this is the low correlation between Omaha (which is located in the valley) and Nebraska City (which is located on the bluff just above the valley across the river from Fremont county), which creates a large correlation gradient for the Omaha data making it appear to not represent the valley portions of Fremont and Mills counties. Given the close proximity of these areas to

the Omaha meteorological site, and the similarity in orientation of the valley it is likely that the correlation is actually higher than implied on this map.

The Northeast corner of the state is the area where the representivity of the chosen meteorological station is most questionable. This area of the state is unique in that it is rather hilly, and has a higher density of forested land. Unfortunately, Decorah is the only meteorological station in this area that is not located in a valley that significantly affects the wind patterns. Decorah's wind rose is marked by generally decreased wind speeds and a high occurrence of calm conditions. These observations are likely due to the higher surface roughness that exists in this area of the state, but the lack of other observation sites to confirm this assumption presents a problem for verifying the accuracy of the correlation (or lack thereof) in this area. The only other nearby sites are Prairie Du Chien and Boscobel, both of which are located in the Wisconsin River valley (Prairie Du Chien at the confluence with the Mississippi River) which is oriented perpendicular to the Mississippi River valley. Since the wind fields at both Prairie Du Chien and Boscobel are significantly influenced by the valley this causes a very sharp correlation gradient in this area. The result is lower confidence in the representivity of the chosen meteorological sites for these areas, although the La Crosse data is likely more representative of the Mississippi River valley than implied on the map, especially in areas where the orientation of the valley is more similar to that seen near La Crosse (generally oriented North – South or Northwest – Southeast).

The representativeness of the upper air data was determined purely based on spatial proximity because the measurements are taken above the surface where local geographic features and land cover do not have an effect. The two nearest upper air sites are Omaha, NE and Davenport, IA. These data were applied to roughly the half of the state each is nearest to. The surface data from KFSD, KSUX, KOMA, KSPW, KLWD, KEST, KAMW, KDSM and KMCW were paired with the Omaha upper air data. The surface data from KALO, KMIW, KOTM, KCID, KIOW, KBRL, KLSE, KDBQ, KDVN and KMLI were paired with the Davenport upper air data.

It should be noted that this representivity analysis is intended to provide a guide for general representivity only. The meteorological data assigned to each area of the state by this analysis is only representative to the extent that no local features would significantly alter the meteorological conditions in the area where it is to be applied.

Filling Missing Surface Data

Surface data were only filled for the 19 meteorological stations that were chosen during the representivity analysis. An Excel spreadsheet consisting of a series of embedded programs was used to fill all missing surface data. This program was developed in-house, and is called AERFILL.

The AERFILL program fills missing data using the recommendations in “Procedures for Substituting Values for Missing NWS Meteorological Data for Use in Regulatory Air Quality Models” by Dennis Atkinson and Russell F. Lee (21), and Quality Assures (QA) the results following the recommendations in EPA’s “Meteorological Monitoring Guidance for Regulatory Modeling Applications” document (22). Much of the data filling was performed automatically by AERFILL. Longer, or more problematic gaps, and most quality assurance related decisions were addressed manually.

The data were filled via many different techniques, ranging from simple interpolations or persistence, to complicated spatially and temporally-weighted averages based on surrounding meteorological stations. In many instances, the data were filled based on the application of meteorological principles and techniques. Comments were included in the file indicating what method was used (one comment for each time the data were edited). The results of the representivity analysis were used to determine which alternate source of data was most likely to provide the best fit. Generally, data from the most representative station was available and was determined to be appropriate. If the data from the most representative neighboring station did not appear to fit or was also missing, the data from the next most representative station was evaluated. This process continued down the hierarchy of most representative stations until acceptable data was found.

After the data were completely filled, a QA procedure was executed. All QA flags were reviewed for relevance and importance. In most cases the flags did not signify inaccurate data, just extremes in the data due to the applicable weather conditions. The more questionable data were cross-checked with other sources of information including one or more of the following:

- The raw ISH data for the station in question.
- ASOS data from the Iowa Environmental Mesonet (IEM) (23) for the station in question.
- The raw ISH data for neighboring stations.
- ASOS data from the IEM for neighboring stations.
- AWOS/RWIS data from the IEM for neighboring stations.

If the data appeared to be meteorologically impossible or improbable, and could not be correlated with the cross-referenced sources, it was adjusted using data-filling schemes similar to those used to fill missing data. An example of this would be if the station pressure for five consecutive hours was 980.0 mb, 980.1 mb, 915.5 mb, 980.3 mb and 980.5 mb. In this case, it is obvious that the third value is invalid, and would have been replaced with a value of 980.2 mb.

If the data seemed to be meteorologically possible, or correlated with the cross-referenced sources, it was not modified. An example of this would be the occurrence of a cold front. A cold front could cause

a rapid shift in pressure, temperature, wind and cloud cover, all of which would be flagged by AERFILL's QA routine, even though they were valid data.

After the QA was complete the data were exported from AERFILL in the format of an AERMET QA input file, ready to be merged with the 1-minute and upper air data.

Filling Missing Upper Air Data

It has been shown that missing upper air data can cause an under-prediction bias in AERMOD. These effects, and procedures for filling missing upper air data, are outlined in the document “A Method for Filling AERMET Upper Air Data” (24). The procedures described in that document were used to fill the missing data.

The raw data from four sites (Davenport, IA; Lincoln, IL; Minneapolis, MN; and Omaha, NE) were processed using AERMET. The output from AERMET was then imported into Excel and sorted in order to create a list of available morning soundings at each location. Evening soundings are not currently used by AERMET, and were therefore not evaluated. The morning sounding inventory is summarized in Table 3.

Table 3. Morning Sounding Inventory

Station	Available Morning Soundings	
	Count	Percentage
Davenport, IA	1,790	98.0%
Lincoln, IL	1,796	98.4%
Minneapolis, MN	1,783	97.6%
Omaha, NE	1,791	98.1%

Using this information, the raw data were edited to fill in the missing morning soundings. Only data from the two nearest sites (Davenport and Omaha) were used to process data for AERMOD, so only those data were filled. In cases where the data from only one of these locations was missing, the corresponding sounding from the other location was used to fill in the gap. When the same sounding was missing from both Davenport and Omaha, data from either Lincoln, IL or Minneapolis, MN were used to fill the gap. There were two instances where the sounding was missing from all four sites. In these cases, the morning sounding from the previous day at Davenport was used to fill the gap.

These edited data were then reprocessed with AERMET to produce the files necessary to be merged with the surface and 1-minute data.

1-Minute Data (AERMINUTE)

The latest version of AERMINUTE (dated 11325) was used to process the 1-minute data for each of the meteorological stations processed for use in AERMOD. The 1-minute wind data was obtained from the NCDC's online ftp directory (3) in the 6405 format which is compatible with the AERMINUTE program. The downloaded data consists of text files; each text file contains data for one station-month.

The 1-minute wind data consists of running 2-minute average winds that are reported every minute at each ASOS station. The archived 1-minute winds contained in the downloaded text files from the NCDC were used to calculate hourly average wind speed and directions which could then be used to supplement the standard archive of hourly observed winds in the surface data – reducing the number of calms, variable winds and missing data.

The AERMINUTE preprocessor requires the user to indicate the start and end month and year of the data being processed as well as whether or not the station is part of the Ice Free Winds (IFW) group. The IFW group refers to ASOS sites that use sonic anemometers instead of cup and vane anemometers to measure winds. If the station is part of the IFW group during the data period being processed by AERMINUTE, then the IFW installation date must be entered into the program. The website indicated in section 3.1.2 of the AERMINUTE user guide (25) was used to determine if the stations were part of the IFW group and their respective installation dates.

AERMINUTE gives an option to include data files of standard NWS observations in order to compare the non-quality controlled 1-minute winds from the 1-minute data files against the quality controlled standard observations. The raw ISH data for each of the nineteen stations being processed was included in the AERMINUTE input file for comparison with each of these stations 1-minute raw data files.

The combination of the above described data was processed by AERMINUTE to produce the necessary output file for merging with the filled and edited surface and upper air data.

Land Use Analysis

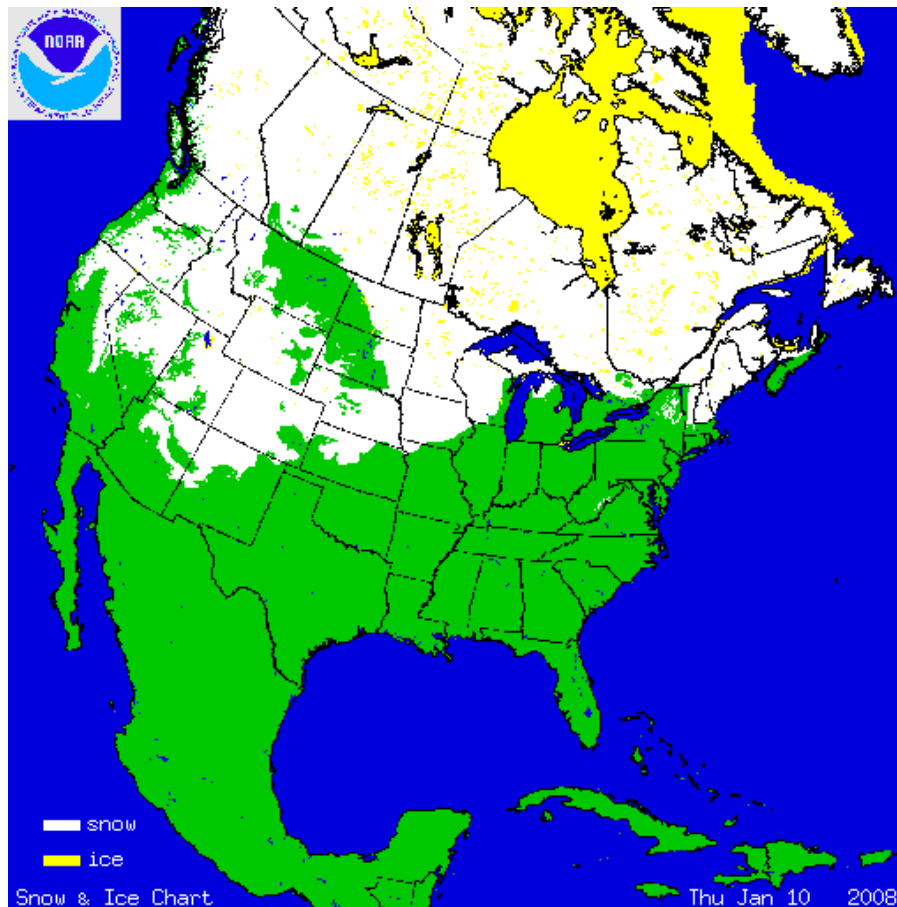
The latest version of AERSURFACE (dated 08009) was used to conduct the land use analysis for each meteorological site. While the data were processed in accordance with the guidance available in the AERSURFACE user guide (8), two additional levels of detail were added to this stage of processing. These include refinements to the snow cover and surface moisture condition estimates.

Snow Cover and Surface Moisture Conditions

The AERSURFACE preprocessor requires the user to indicate whether or not the site experiences continuous snow cover during the winter months, and if the area experienced below normal, above normal or average surface moisture conditions. Previous meteorological data processed for use in Iowa assumed that there was continuous snow cover during the winter months and that all areas of the state experienced average surface moisture conditions. On average these assumptions were probably good estimates. However, more detailed snow cover and surface moisture data are available, and have been incorporated into the processing of the current dataset to further refine the accuracy of the inputs to AERMOD.

Daily snow cover maps from NCDC were analyzed for the entire 2005 – 2009 period (26). An example of a daily snow cover map is depicted in Figure 8 below.

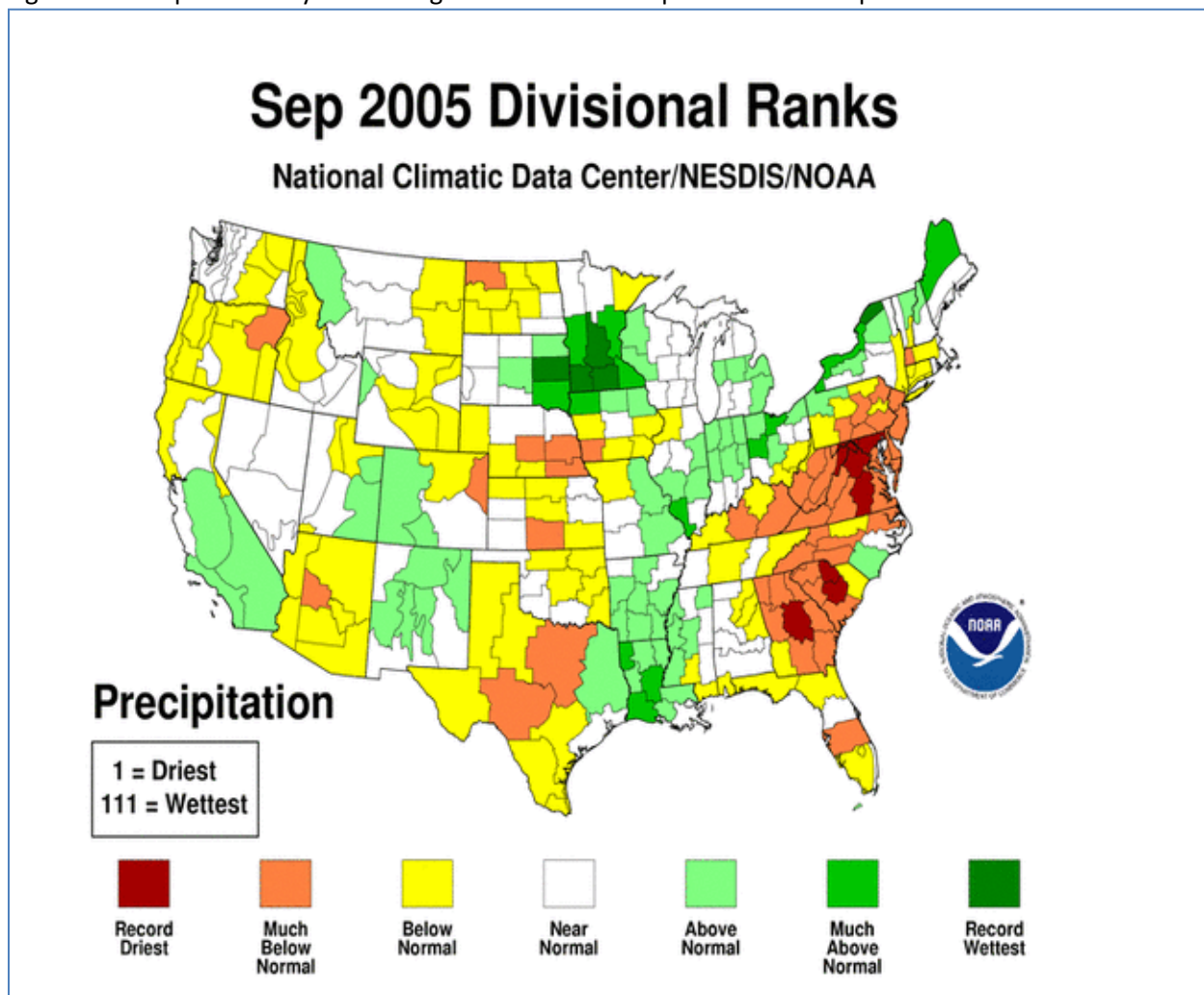
Figure 8. Example Daily Snow Cover Map



For each day of the period, a determination of whether or not snow cover was present at each meteorological station was made based on visual estimates of the proximity of snow cover shown on the maps to the stations being processed. These data were then combined to determine which months of the year should be considered as having continuous snow cover at each station. Continuous snow cover was assumed for each month during which there was snow cover during at least half of the days in that month at that site (marked by the letter “X” in Tables 4 – 8).

To determine the relative surface moisture conditions during each month of the period, monthly climatological divisional precipitation rank maps were analyzed (27). An example of a monthly climatological divisional precipitation rank map is depicted in Figure 9 below.

Figure 9. Example Monthly Climatological Divisional Precipitation Rank Map



Areas shown as “Record Driest” or “Much Below Normal” were categorized as being dry. Areas shown as “Below Normal”, “Near Normal” or “Above Normal” were categorized as average. Areas shown as “Much Above Normal” or “Record Wettest” were categorized as wet. These categories approximate the guidance in section 2.2 of the AERSURFACE user guide (8):

The surface moisture condition can be determined by comparing precipitation for the period of data to be processed to the 30-year climatological record, selecting “wet” conditions if precipitation is in the upper 30th-percentile, “dry” conditions if precipitation is in the lower 30th-percentile, and “average” conditions if precipitation is in the middle 40th-percentile.

Dry conditions are represented in Table 4 – 8 with orange-shaded cells, wet conditions are represented with blue-shaded cells and average conditions are not shaded.

Table 4. Snow Cover and Moisture Conditions - 2005

	January	February	March	April	May	June	July	August	September	October	November	December
KALO	X	X										X
KAMW	X	X										X
KBRL												X
KCID	X	X										X
KDBQ	X	X										X
KDSM	X											X
KDVN	X											X
KEST	X											X
KFSD	X											X
KIOW	X											X
KLSE	X	X	X									X
KLWD	X											X
KMCW	X											X
KMIW	X	X										X
KMLI	X											X
KOMA	X											X
KOTM	X											X
KSPW	X											X
KSUX	X											X

Table 5. Snow Cover and Moisture Conditions - 2006

	January	February	March	April	May	June	July	August	September	October	November	December
KALO												
KAMW												
KBRL												
KCID												
KDBQ		X										
KDSM												
KDVN												
KEST	X	X										
KFSD	X											
KIOW												
KLSE		X										
KLWD												
KMCW	X	X										
KMIW												
KMLI												
KOMA												
KOTM												
KSPW	X	X										
KSUX												

Table 6. Snow Cover and Moisture Conditions - 2007

	January	February	March	April	May	June	July	August	September	October	November	December
KALO	X	X										X
KAMW	X	X										X
KBRL	X	X										X
KCID	X	X										X
KDBQ	X	X										X
KDSM	X	X										X
KDVN	X	X										X
KEST	X	X	X									X
KFSD	X	X										X
KIOW	X	X										X
KLSE	X	X	X									X
KLWD	X	X										X
KMCW	X	X	X									X
KMIW	X	X										X
KMLI	X	X										X
KOMA	X	X										X
KOTM	X	X										X
KSPW	X	X	X									X
KSUX	X	X										X

Table 7. Snow Cover and Moisture Conditions - 2008

	January	February	March	April	May	June	July	August	September	October	November	December
KALO	X	X	X									X
KAMW	X	X	X									X
KBRL	X	X										X
KCID	X	X	X									X
KDBQ	X	X	X									X
KDSM	X	X										X
KDVN	X	X										X
KEST	X	X	X									X
KFSD	X	X	X									X
KIOW	X	X	X									X
KLSE	X	X	X									X
KLWD	X	X										X
KMCW	X	X	X									X
KMIW	X	X	X									X
KMLI	X	X										X
KOMA	X	X										X
KOTM	X	X										X
KSPW	X	X	X									X
KSUX	X	X	X									X







Table 8. Snow Cover and Moisture Conditions - 2009

	January	February	March	April	May	June	July	August	September	October	November	December
KALO	X	X										X
KAMW	X	X										X
KBRL	X											X
KCID	X	X										X
KDBQ	X	X										X
KDSM	X	X										X
KDVN	X											X
KEST	X	X										X
KFSD	X											X
KIOW	X	X										X
KLSE	X	X										X
KLWD												X
KMCW	X	X										X
KMIW	X	X										X
KMLI	X											X
KOMA	X											X
KOTM	X	X										X
KSPW	X	X										X
KSUX	X											X

Land Cover Data

The National Land Cover Dataset from 1992 (NLCD92) was chosen for this analysis because it is the format currently compatible with the AERSURFACE preprocessor. The land cover data were obtained from the USGS Seamless Server (6) in GEOTIFF format. The classifications included in this data are summarized in Table 9.

Table 9. 1992 National Land Cover Dataset Classification Summary

Classification	Class Number	Color Code	Land Cover Category
Water	11		Open Water
	12		Perennial Ice/Snow
Developed	21		Low Intensity Residential
	22		High Intensity Residential
	23		Commercial/Industrial/Transportation
Barren	31		Bare Rock/Sand/Clay
	32		Quarries/Strip Mines/Gravel Pits
	33		Transitional
Forested Upland	41		Deciduous Forest
	42		Evergreen Forest
	43		Mixed Forest
Shrubland	51		Shrubland
Non-natural Woody	61		Orchards/Vineyards/Other
Herbaceous Upland	71		Grasslands/Herbaceous
Herbaceous Planted/Cultivated	81		Pasture/Hay
	82		Row Crops
	83		Small Grains
	84		Fallow
	85		Urban/Recreational Grasses
Wetlands	91		Woody Wetlands
	92		Emergent Herbaceous Wetlands

Figures 10 – 28 depict the land cover around each of the 19 surface stations. Each figure represents the 10 km by 10 km domain used by AERSURFACE to calculate the Bowen Ratio and Albedo for each site. The circle in the middle of each figure represents the 1 km upwind fetch used by AERSURFACE to calculate the surface roughness.

Figure 10. Land Cover - Ames, IA (KAMW)

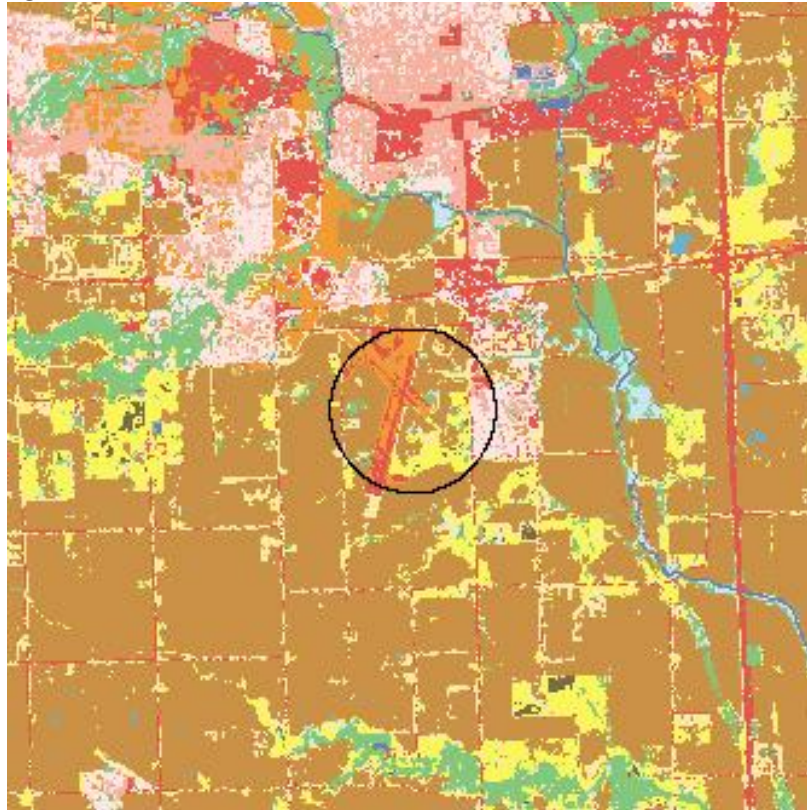


Figure 11. Land Cover - Burlington, IA (KBRL)

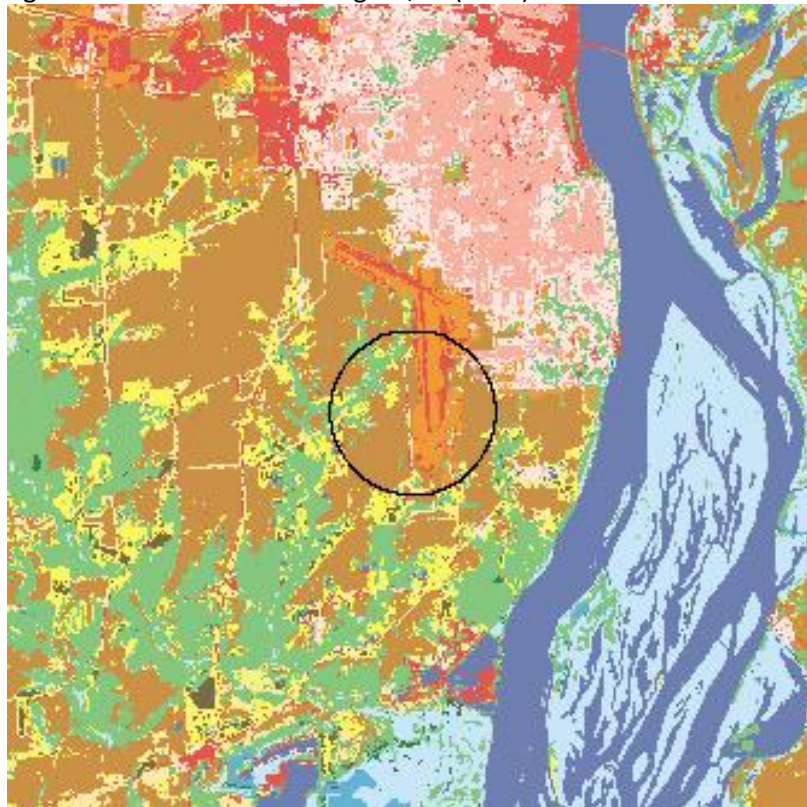


Figure 12. Land Cover - Cedar Rapids, IA (KCID)



Figure 13. Land Cover - Davenport, IA (KDVN)



Figure 14. Land Cover - Des Moines, IA (KDSM)

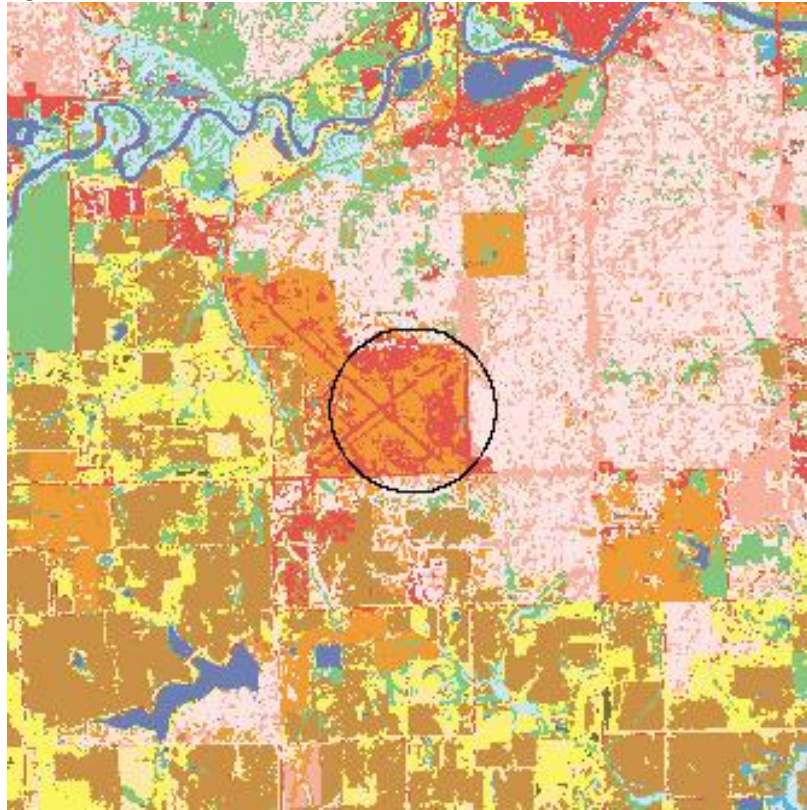


Figure 15. Land Cover - Dubuque, IA (KDBQ)

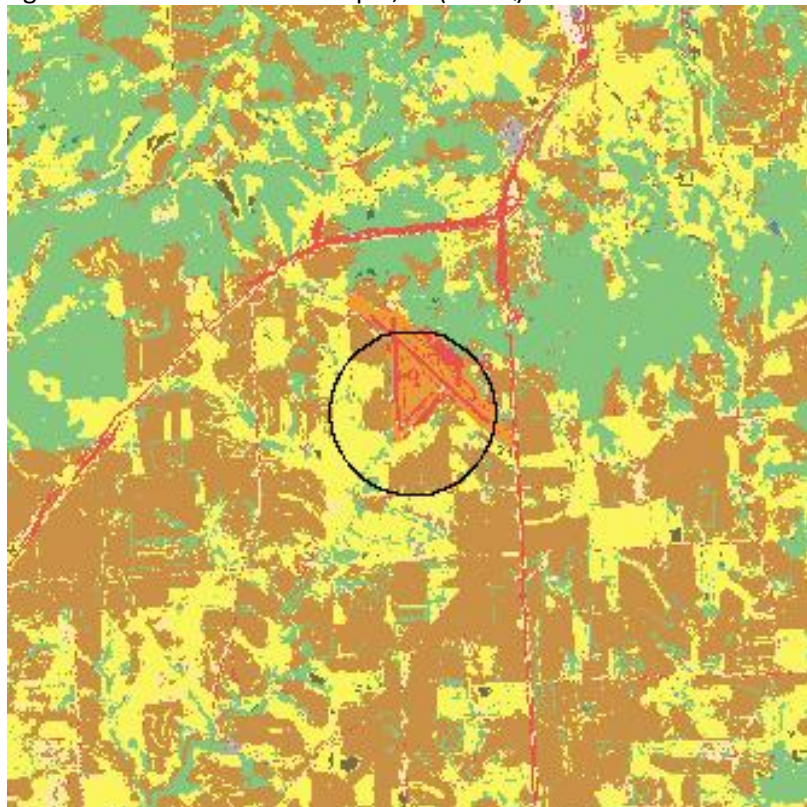


Figure 16. Land Cover - Estherville, IA (KEST)

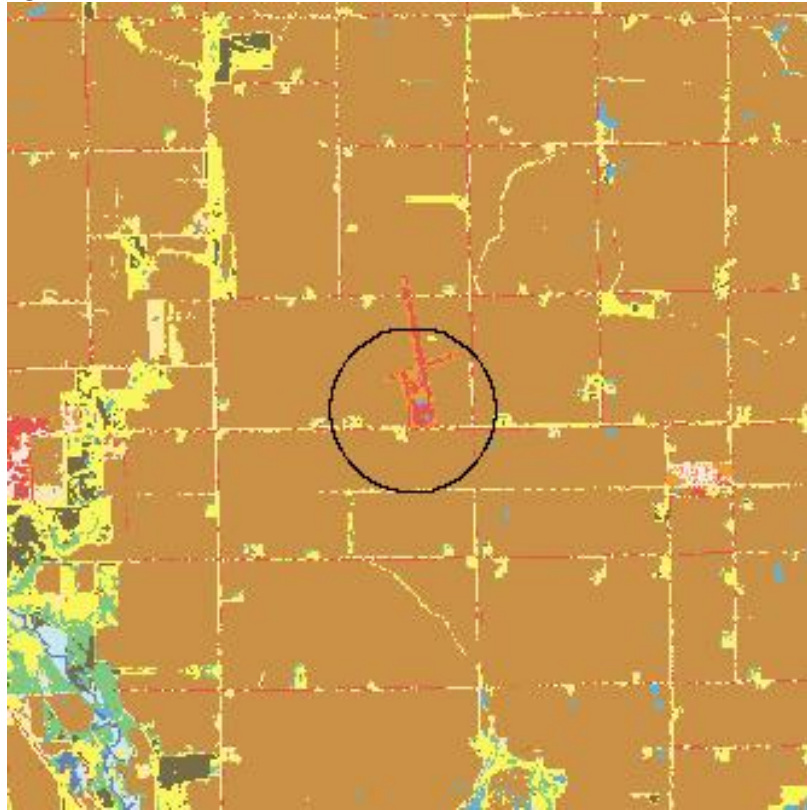


Figure 17. Land Cover - Iowa City, IA (KIOW)

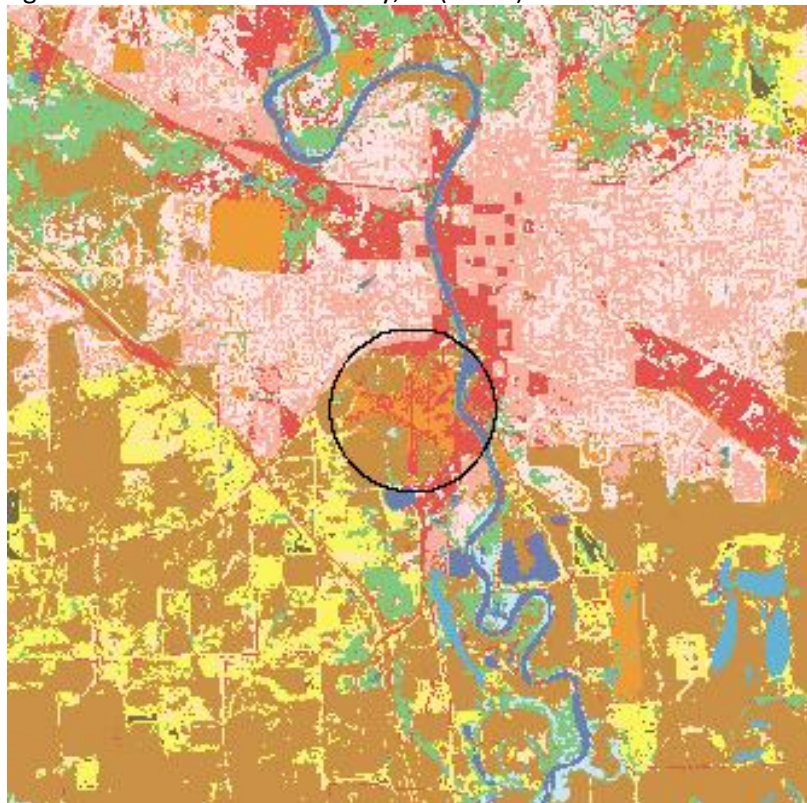


Figure 18. Land Cover - La Crosse, WI (KLSE)



Figure 19. Land Cover - Lamoni, IA (KLWD)

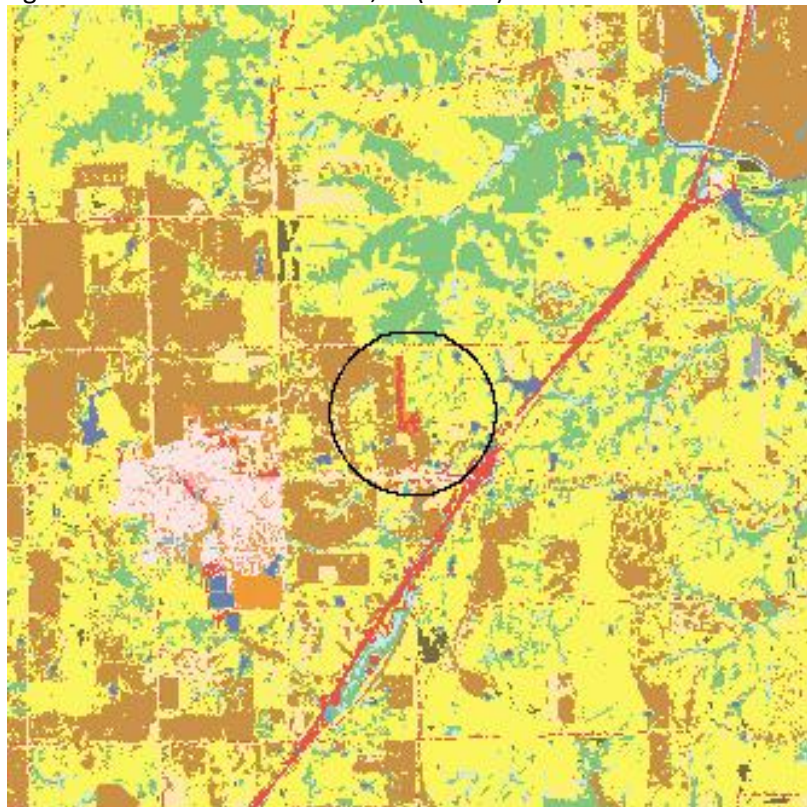


Figure 20. Land Cover - Marshalltown, IA (KMIW)

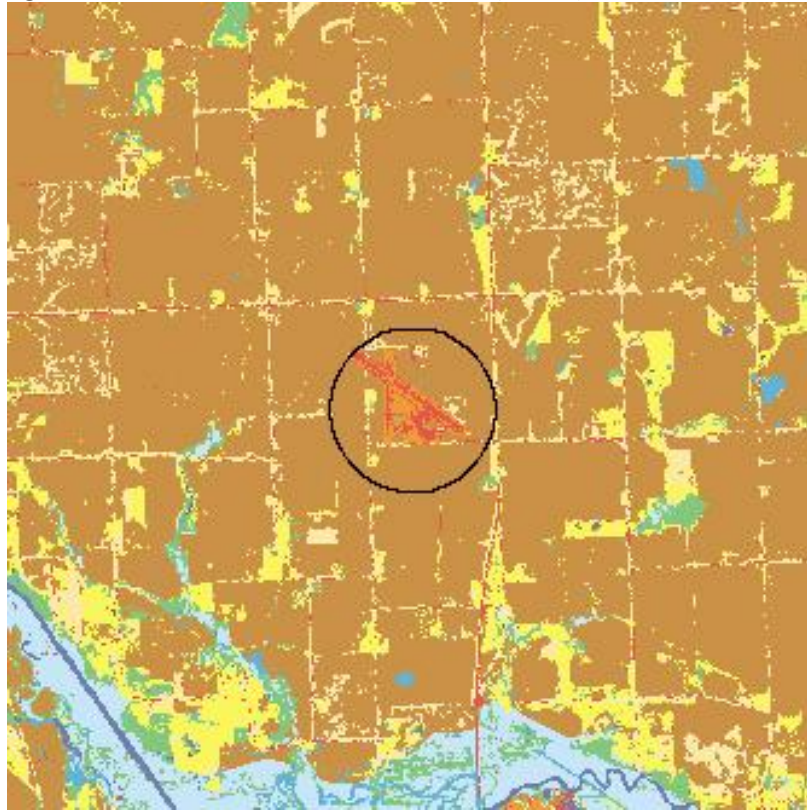


Figure 21. Land Cover - Mason City, IA (KMCW)

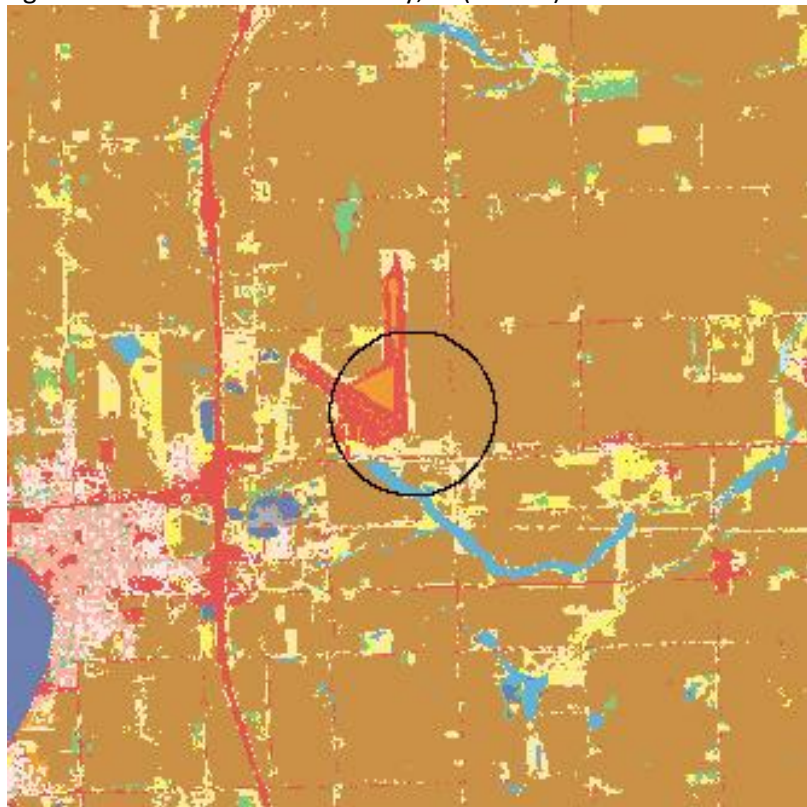


Figure 22. Land Cover - Moline, IL (KMLI)

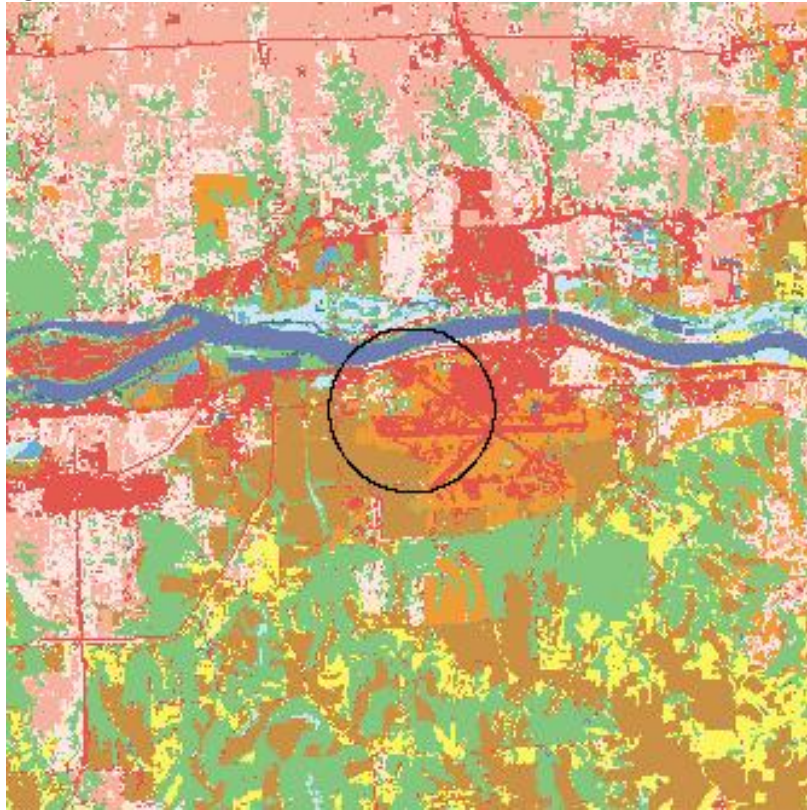


Figure 23. Land Cover - Omaha, NE (KOMA)

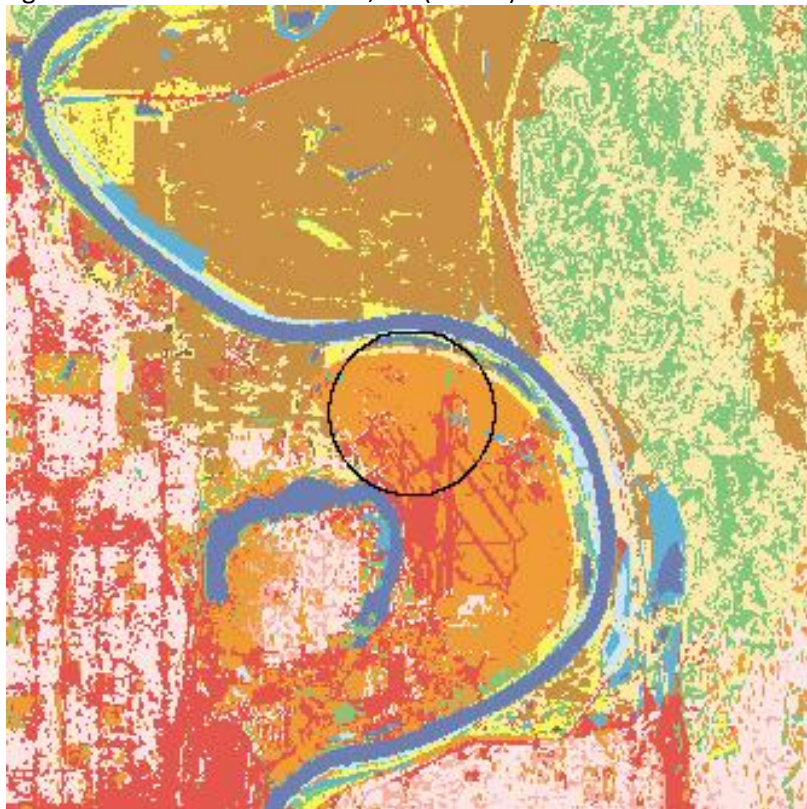


Figure 24. Land Cover - Ottumwa, IA (KOTM)

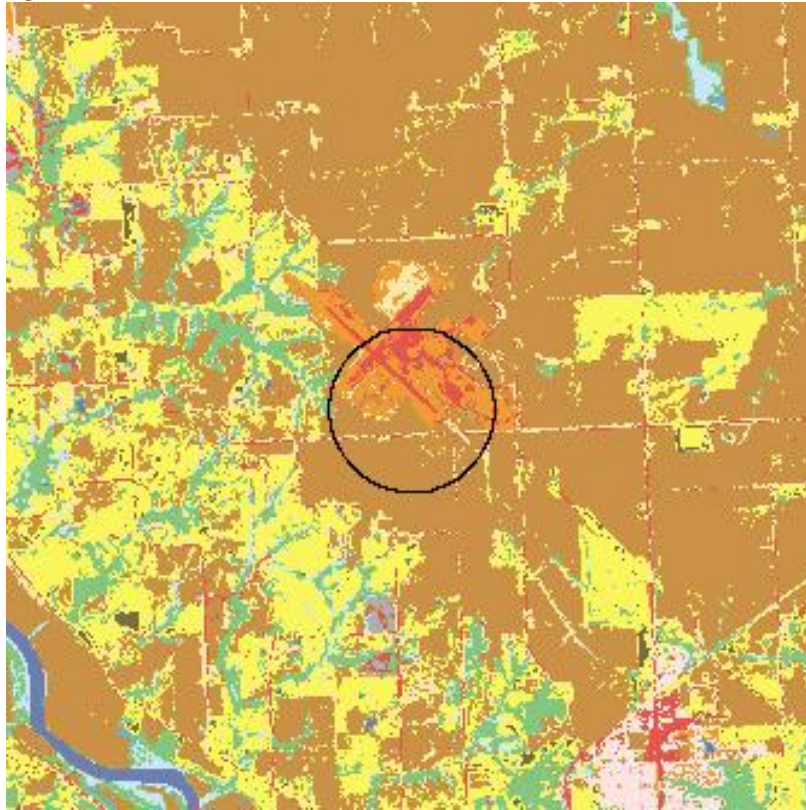


Figure 25. Land Cover - Sioux City, IA (KSUX)

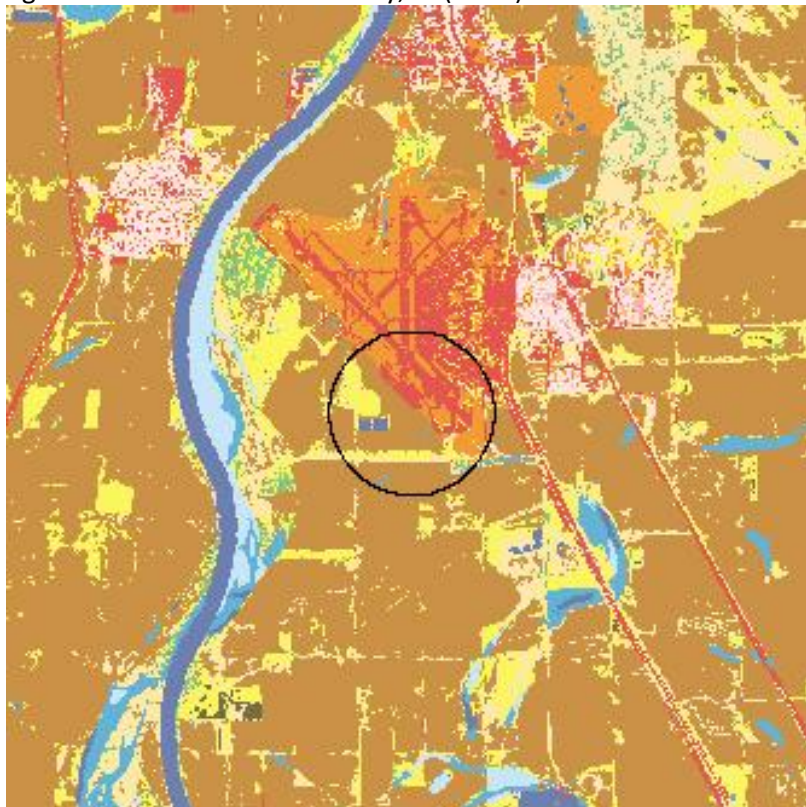


Figure 26. Land Cover - Sioux Falls, SD (KFSD)

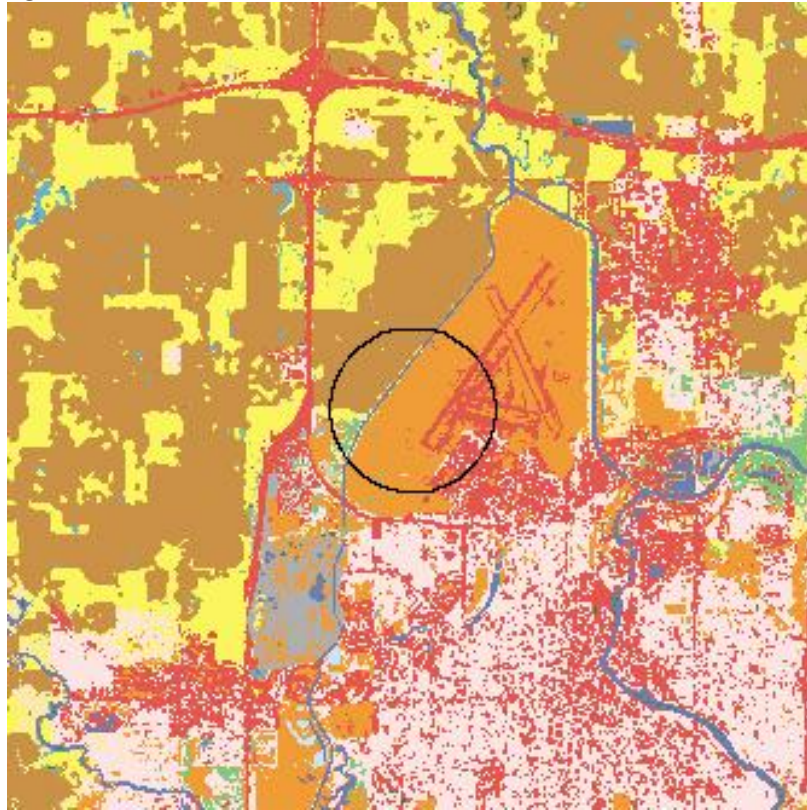


Figure 27. Land Cover - Spencer, IA (KSPW)

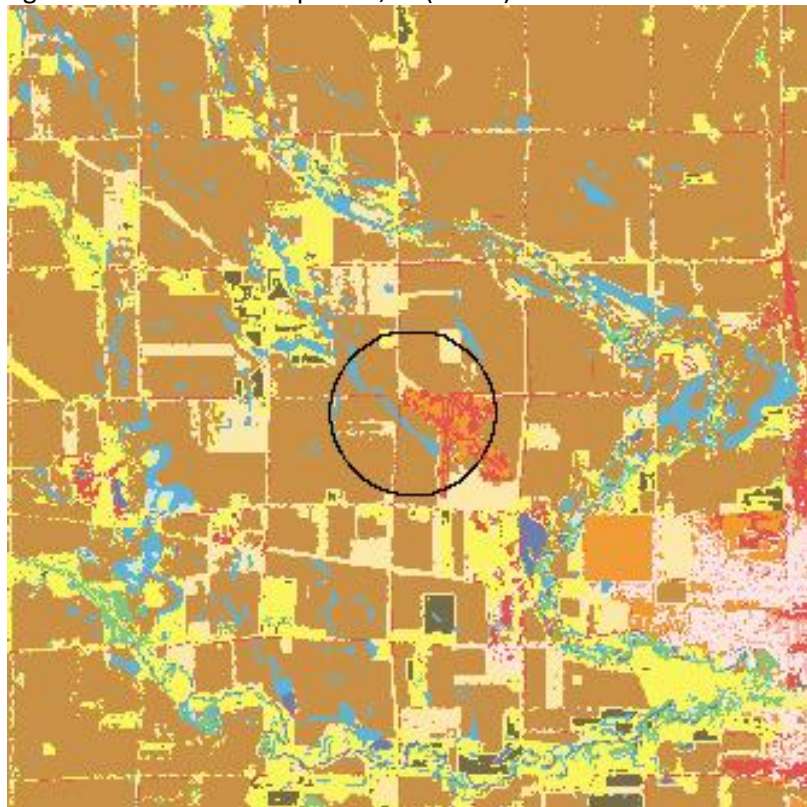
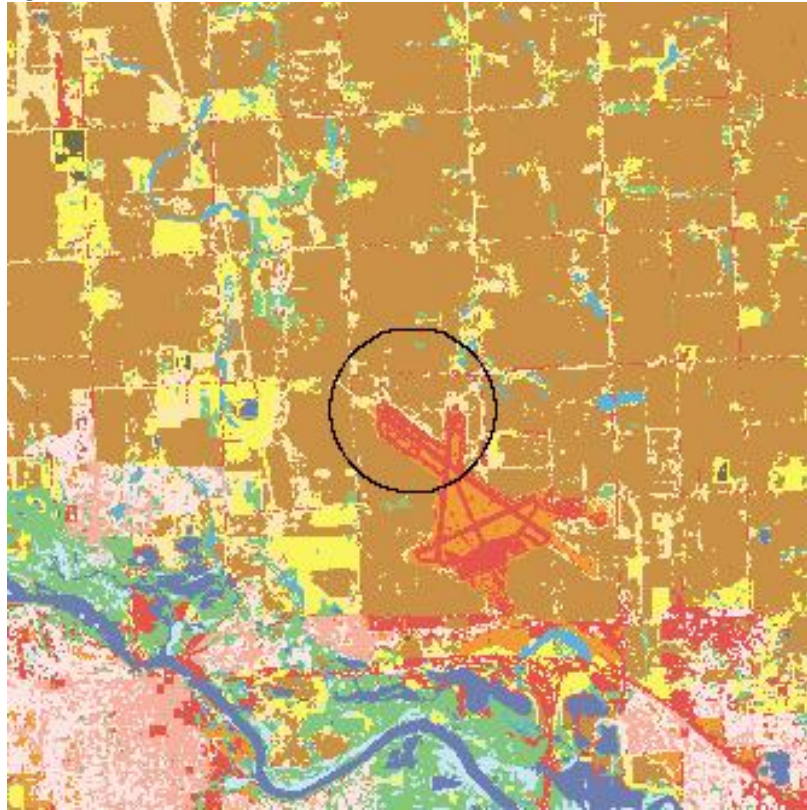


Figure 28. Land Cover - Waterloo, IA (KALO)



Processing Data in AERSURFACE

AERSURFACE was executed using the maximum 12 sectors for determining surface roughness for varying directions. Using the land cover and snow cover data described above, each site was processed three times (once each for “dry”, “average” and “wet” surface moisture conditions). The output for the individual months from these three runs were then manually combined into one output file for each site based on the moisture conditions determined for each month in Tables 4 – 8. These combined output files were then used in the final stage of AERMET.

Comparison of Model Results

The latest version of AERMOD available at the time (dated 11103) was used to conduct a sensitivity analysis using both the 2000 – 2004 and 2005 – 2009 meteorological datasets. The goal of this analysis was to determine the expected change in model results due to the change in meteorological years and the change in the methods used to process the data. This section summarizes the results from this sensitivity analysis.

A series of point, volume and area sources were modeled with varying release heights between zero and 65 meters above ground, with release heights set at every 5 meters. Two types of each source were modeled at each release height – one with characteristics resulting in more initial dispersion, the other with characteristics resulting in less. The less disperse point sources were modeled with an ambient exhaust temperature (varies with and is the same as the atmospheric temperature) and horizontally-oriented release, whereas the more disperse point sources were modeled with a buoyant exhaust temperature of 100° C and vertically-oriented release. The less disperse volume sources were modeled with 1-meter horizontal and vertical dimensions, whereas the more disperse volume sources were modeled with 10-meter horizontal and vertical dimensions. The less disperse area sources were modeled with no initial vertical dimension, whereas the more disperse area sources were modeled with a 10-meter initial vertical dimension. This variety of sources were modeled for the 1-hour, 3-hour, 8-hour, 24-hour and annual averaging periods using both sets of meteorological data.

The concentrations predicted using the new meteorological data were then divided by the concentrations predicted using the old meteorological data to determine the ratio of the difference in concentration caused by the change. Ratios greater or less than 1.0 indicate an expected increase or decrease in concentration respectively, while a ratio equal to 1.0 indicates no expected change in concentration. Similarly, ratios of 2.0 and 0.5 indicate a doubling or halving of the concentration respectively.

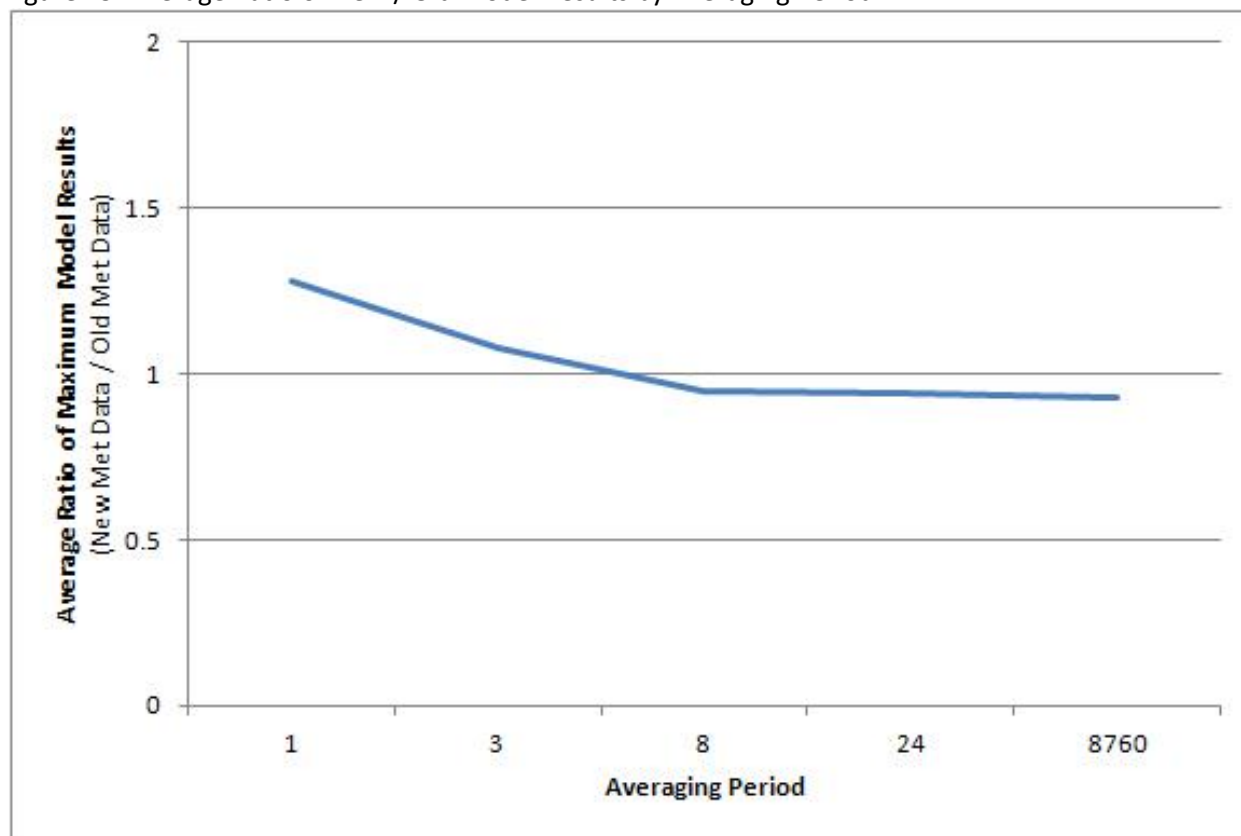
In the interest of consistency, and in an effort to retain data that would be helpful in explaining any potential biases or patterns in the data, all combinations of source types, release heights and averaging periods were modeled even though several of those combinations have little or no real-world relevance:

- Point sources are generally used to represent smokestacks or vents, and normally do not exhaust at ground level.
- Area sources are most commonly used to represent storage piles or other broad ground-based sources, and are almost never applied to sources released higher than ten meters above the ground.
- Volume sources are most commonly used to represent sources of emissions that have already been dispersed to some degree before being released into the general atmospheric flow, such as emissions from haul roads or emissions vented into a building that seep out various points in the structure. These types of sources are generally released within 20 meters of the ground.
- Both area and volume sources are almost always used to represent particulate emissions, to which only the 24-hour and annual averaging periods are important (with respect to the applicable NAAQS).

The data presented in this summary were filtered to exclude all such non-realistic data in order to provide a more real-world depiction of the expected change in model results. A detailed comparison that includes all possible combinations of source types, release heights and averaging periods can be found in [Appendix B](#).

On average the model results are predicted to increase for the 1-hour and 3-hour averaging periods, but decrease for the 8-hour, 24-hour and annual averaging periods (Figure 29).

Figure 29. Average Ratio of New / Old Model Results by Averaging Period



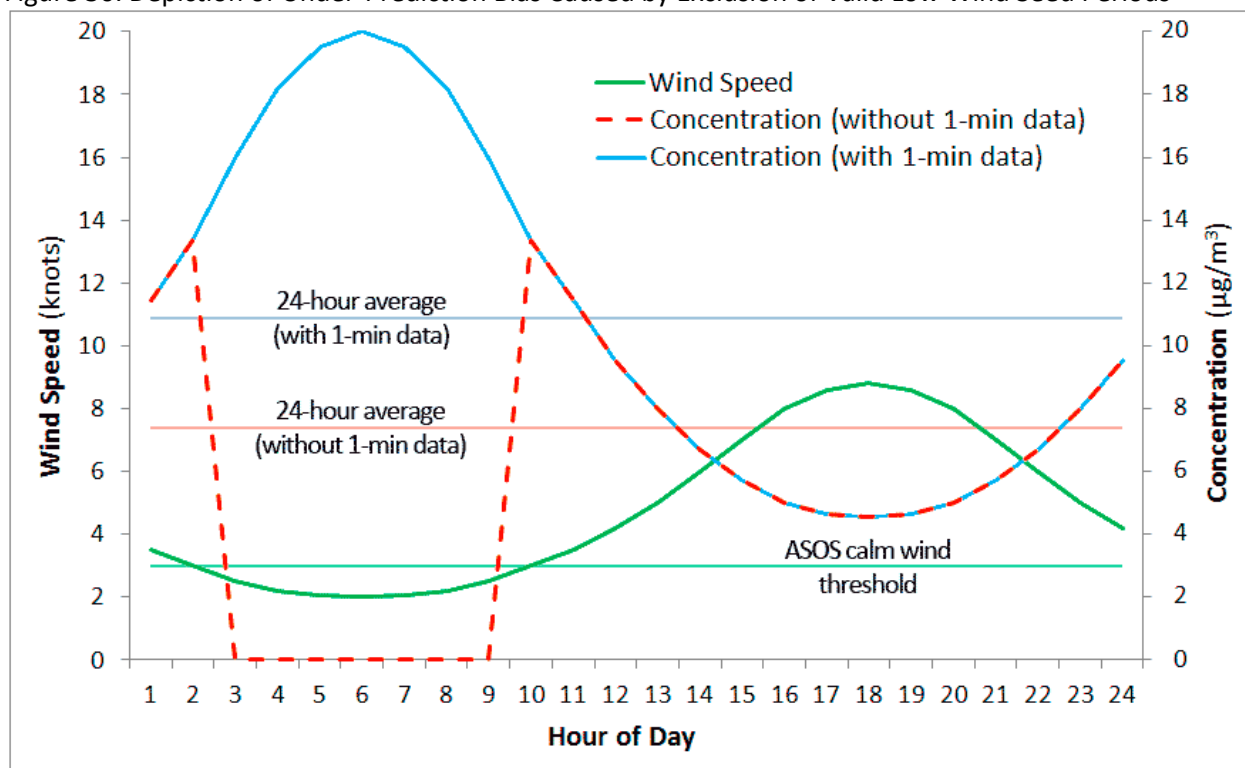
The increase for the shorter-term averaging periods is likely the result of a combination of the use of 1-minute wind data, and the increased sensitivity of the wind instruments at the meteorological stations. The combination of these two factors has resulted in many hours originally reported as calm being replaced with non-calm wind data, and occasionally with wind speeds that are less than 1 m/s. In order to understand the effect this has on the model predictions, it is important to first understand how these data are treated by the model.

Calm conditions and low wind speeds present two problems for steady-state Gaussian dispersion models because the dispersion formulae assume the concentration is inversely proportional to wind speed (13):

1. The formulae are invalid when the wind speed is zero.
2. Very low wind speeds (< 1.0 m/s) tend to result in unrealistically high concentrations.

EPA developed a procedure to address these problems and has implemented it in the regulatory Gaussian dispersion models. As described in Appendix W, the procedure ignores all hours during which calms occur and then treats those hours as if they were missing. Concentrations for 3-hour, 8-hour and 24-hour averages are then calculated by dividing the sum of the non-missing hourly concentrations for the period by the number of non-missing hours. If the total number of valid hours is less than 18 for 24-hour averages, less than 6 for 8-hour averages or less than 3 for 3-hour averages, the sum of the non-missing hourly concentrations should instead be divided by 18 for the 24-hour average, 6 for the 8-hour average and 3 for the 3-hour average. The purpose of this procedure is to counter-act any potential over-prediction caused by periods with excessive missing data (i.e. to prevent a small number of high-concentration hours from driving the predicted concentration for an entire day). Unfortunately, this procedure will have the opposite effect of creating an under-prediction bias if hours with valid (appropriate for use in the applicable model) low wind speeds are excluded and treated as missing. In other words, the hours with lower wind speeds would be thrown out when they would otherwise generally constitute the higher concentrations for a given period. Due to the way the ASOS network records wind speed data, this is exactly what happens when only the ASOS data are used. Fortunately, the inclusion of 1-minute data can alleviate the bias. This under-prediction bias is illustrated in Figure 30.

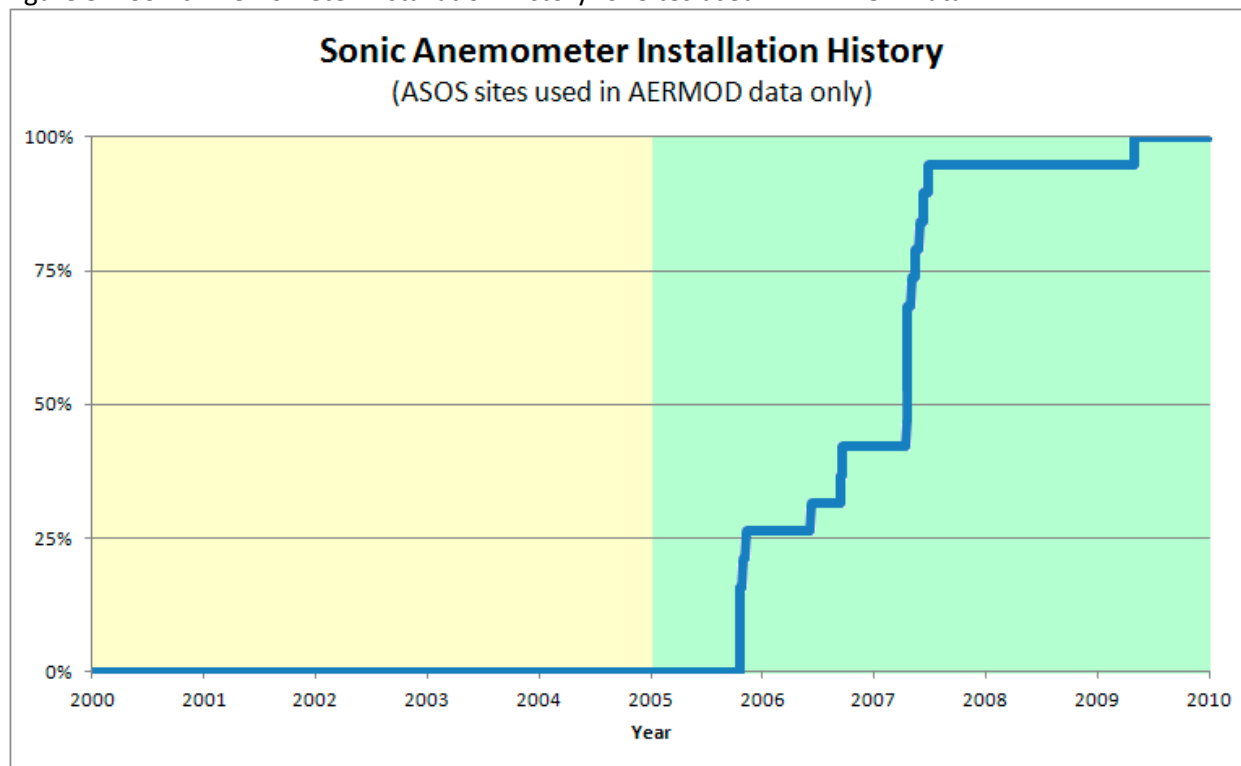
Figure 30. Depiction of Under-Prediction Bias Caused by Exclusion of Valid Low Wind Seed Periods



The ASOS user guide states that the starting threshold for response to wind direction and wind speed (the wind speed necessary to overcome the mechanical friction in the instrument) is 2 knots (~1 m/s) (28). For this reason all ASOS-reported winds less than or equal to 2 knots are reported as calm. The user guide also states that the wind speeds are truncated instead of being rounded, resulting in wind

speeds as high as 2.9 knots being reported as 2 knots, and therefore calm (28). This effectively means that all ASOS wind speeds less than 3 knots (~ 1.5 m/s) are reported as calm conditions. This causes an under-prediction bias during periods containing calms because all wind speeds between 2 knots (~ 1.0 m/s) and 3 knots are treated as missing even though they could be validly used in any Gaussian dispersion model. This effect can be seen in Figure 30, where the minimum wind speed is 2 knots, yet seven hours are excluded from the 24-hour average concentration. This becomes even more important in AERMOD, which “can produce model estimates for conditions when the wind speed may be less than 1 m/s, but still greater than the instrument threshold” (13). The bias in AERMOD is even further exacerbated by the fact that – since the ASOS user guide was written – the anemometers at the majority of ASOS sites have been upgraded to ultrasonic instruments which have a starting threshold approaching 0.0 m/s. By the end of 2009, the anemometers at all 19 AERMOD meteorological stations had been switched from cup and vane anemometers to sonic anemometers (Figure 31). The installation date of the sonic anemometers at each site is listed in [Appendix A](#) (refer to the Ice Free Wind (IFW) installation date).

Figure 31. Sonic Anemometer Installation History for Sites used in AERMOD Data



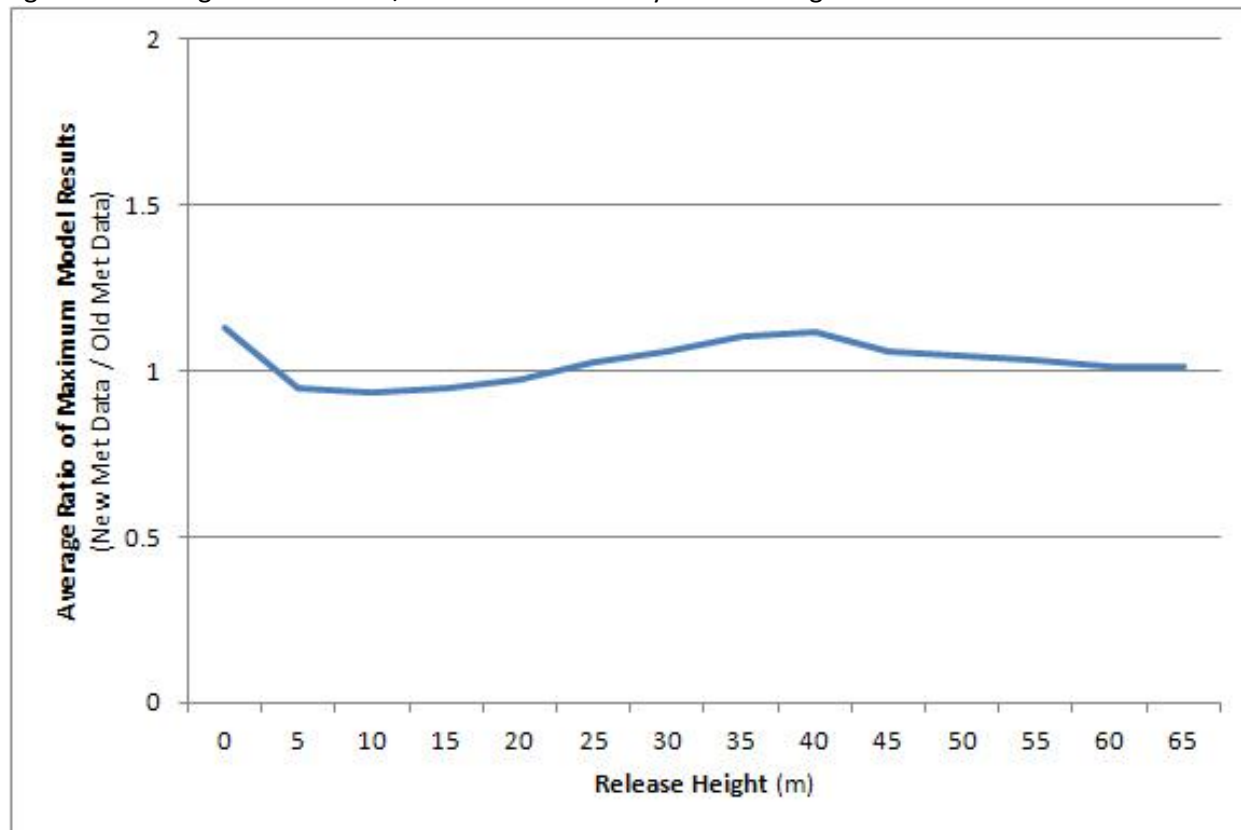
The Department was aware of this potential effect when the 2000 – 2004 data were processed, and so took steps to alleviate the potential under-prediction bias. At the time, every calm hour within one hour of a non-calm hour was filled using a nominal 1 m/s wind speed. Since then, EPA has developed the AERMINUTE preprocessor, which can be used to calculate the hourly average wind speed and direction using the 2-minute average wind data that is recorded every minute (25). The use of AERMINUTE allows for the determination of a non-zero wind speed for many of the hours that would otherwise be considered calm, which is more accurate than the method used to fill calms in the 2000 – 2004 dataset.

The 1-minute data contains the wind speed recorded by the instrument prior to a determination of whether or not the hour is calm. As such it can contain wind speeds as low as the starting threshold of the instrument used to measure it. It is not uncommon for AERMINUTE to calculate average wind speeds of less than the nominal 1 m/s used in the 2000 – 2004 dataset. These lower wind speeds are likely the cause of the increased 1-hour and 3-hour concentrations noted in this analysis.

The decreased concentration observed for the longer-term averaging periods – especially the annual averaging period – is likely caused by a new wind speed bias correction performed by AERMET. As noted above, the wind speeds recorded in the hourly ASOS data are truncated to whole knots, resulting in a half-knot negative wind speed bias. AERMET corrects this bias by adding a half knot to every non-zero wind speed (19). This small increase in wind speed across every hour in the meteorological data set results in a corresponding decrease in model concentrations over the long term.

The expected change in model results also varies by release height (Figure 32). On average the model results are expected to increase the most for ground-level releases and releases approximately 30 – 45 meters above the ground. A decrease in concentration is expected for releases between 5 and 20 meters above the ground.

Figure 32. Average Ratio of New / Old Model Results by Release Height



All results depicted up to this point are averages of all maximum concentrations regardless of source type. As multiple types of sources were modeled, it is also worthwhile to analyze the expected change in results based on source type. Figures 33 – 38 depict the expected change in model concentration by

averaging period for the various combinations of source types and characteristics (averaged across all applicable release heights). Figures 39 – 44 depict the expected change in model concentration by release height for the various combinations of source types and characteristics (averaged across all applicable averaging periods).

One of the most important results to note applies to the “more disperse” point source category (Figures 34 and 40). These are stacks with a vertical exhaust that is hotter than the surrounding air (generators, boilers, combustion turbines, etc.). This type of source constitutes a large percentage of modeled sources. Based on these figures, there is expected to be little or no change in concentration, on average, for most averaging periods and all release heights, with the largest predicted increase affecting the 1-hour averaging period.

Overall, the largest expected increase in model concentration will affect the 1-hour and 3-hour averaging periods for non-buoyant, horizontal/obstructed exhaust point sources with release heights between 30 meters and 45 meters above the ground (see Figure 39). Ground-based area sources that have little or no initial dispersion are also predicted to have higher concentrations when using the new meteorological data (see Figure 43). This is likely due to the lack of meander for area sources as described in section 6.2 of the AERMOD implementation guide (29). In cases where an area source produces large concentrations during periods with very light wind speeds it may be appropriate to instead characterize the source using a volume source which is likely to alleviate the erroneous over-prediction (see Figure 41). Most other source types are expected to see lower concentrations on average.

Figure 33.

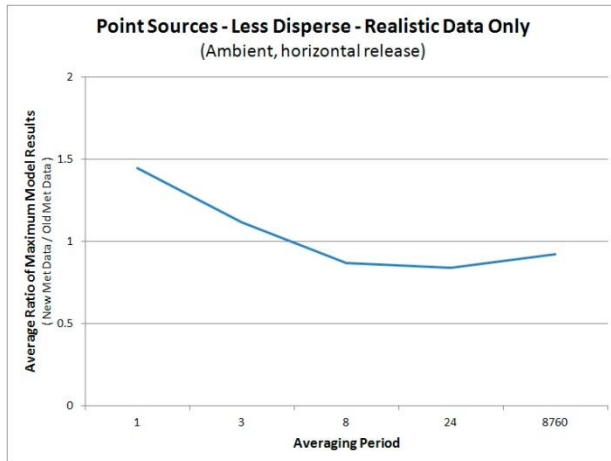


Figure 34.

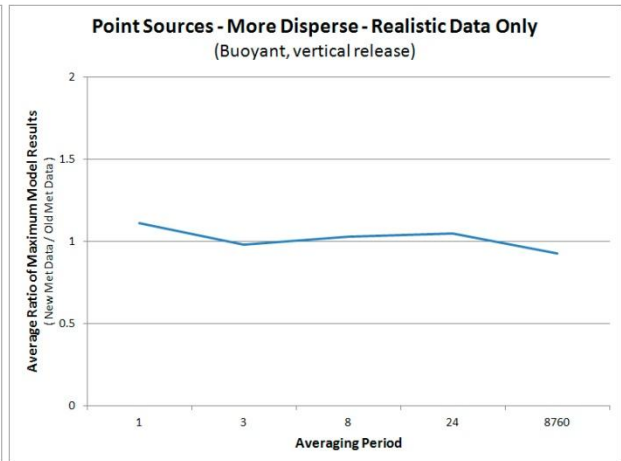


Figure 35.

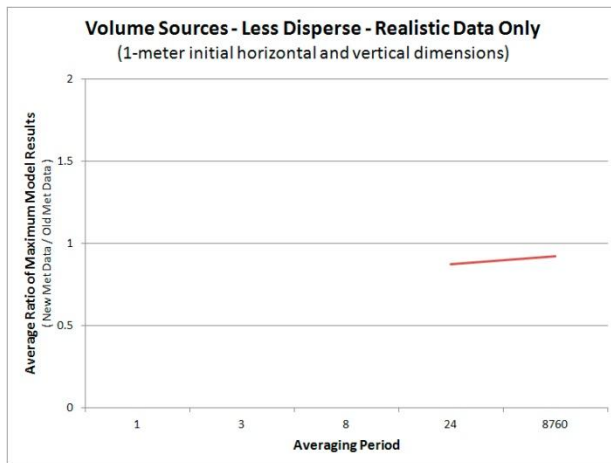


Figure 36.

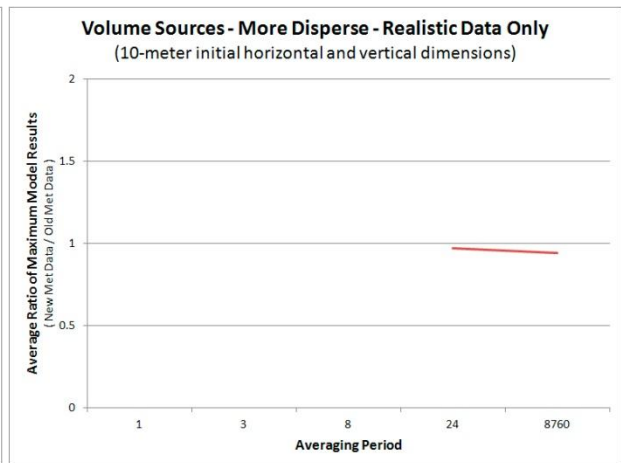


Figure 37.

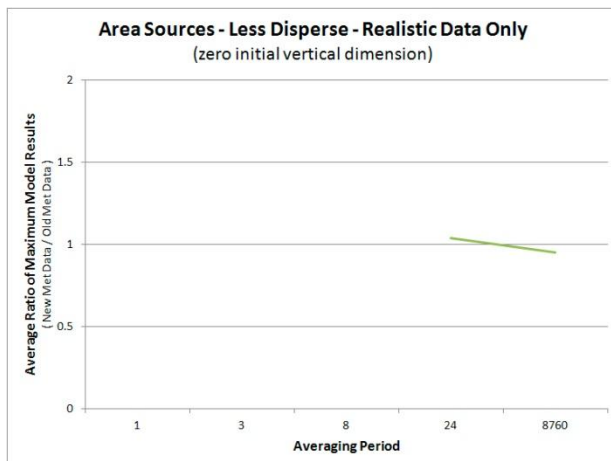


Figure 38.

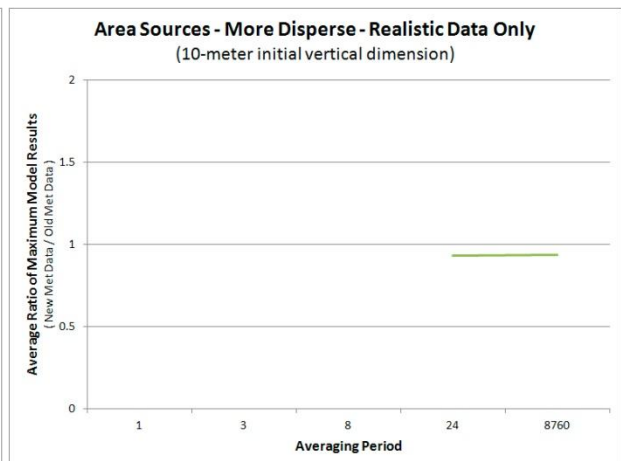


Figure 39.

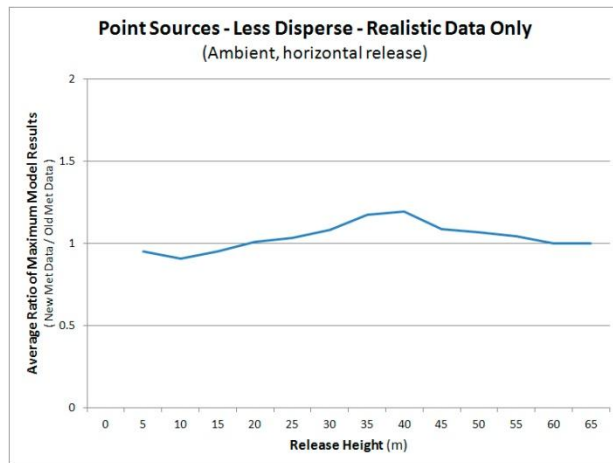


Figure 40.

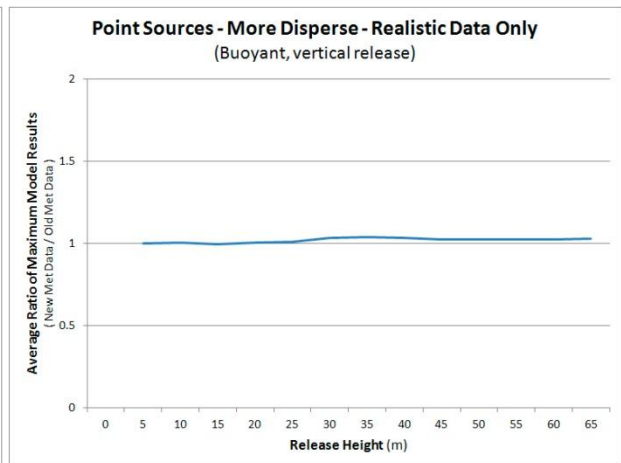


Figure 41.

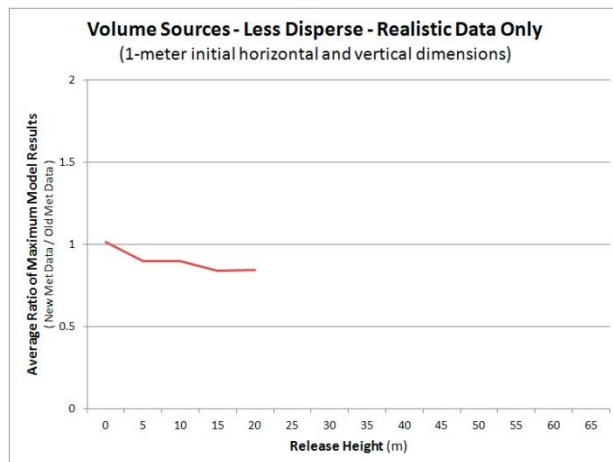


Figure 42.

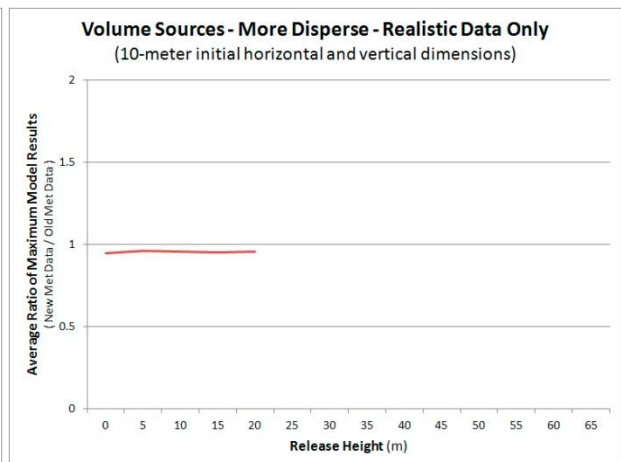


Figure 43.

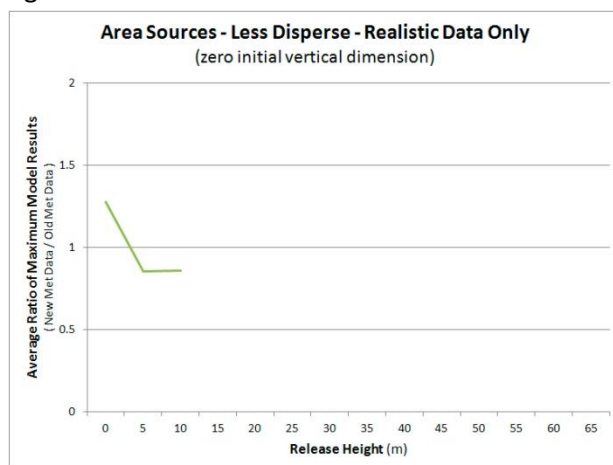
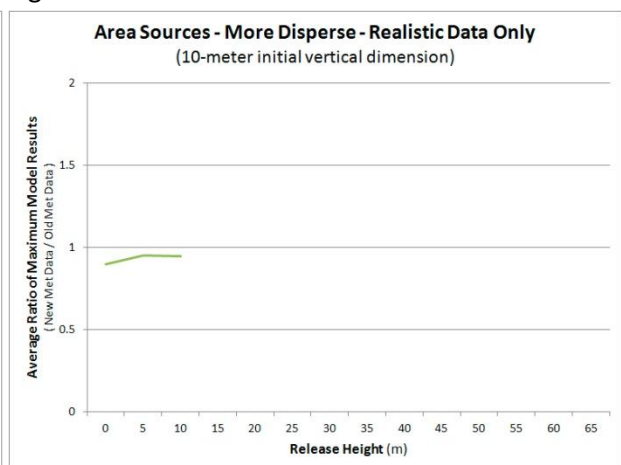


Figure 44.



The comparisons described above were conducted by pairing the results using the 2000 – 2004 meteorological data from one site to the model results using the 2005 – 2009 meteorological data from the same site. Since the new meteorological dataset includes sites that were not available in the old dataset, not all information was able to be used in the analysis. As a result, these comparisons only depict the expected change in model results due to the change in model years and processing methodology, not the expected change in model prediction caused by a change in the representative site. A more detailed comparison of model results was conducted using all 19 meteorological sites that includes the expected change in concentration due to a change in representative site. The results of this analysis are presented in [Appendix B](#). In addition, the data in [Appendix B](#) have not been filtered to exclude the unrealistic source type/release height/averaging period combinations.

A fairly consistent effect is seen in areas where the representative site has changed from a station located in the Missouri or Mississippi River valley to a station that is not located in the valley, or visa-versa. River valleys that significantly affect atmospheric flow are generally characterized by less disperse wind fields due to channeling effects by the valley. The less disperse wind fields cause an increased frequency of impacts at locations downwind of primary wind directions, resulting in higher average long-term concentrations. For this reason, sites within one of the river valley subdivisions previously represented by meteorological data collected at a site outside the river valley can expect an increase in long-term concentration on average. This includes the Mississippi River valley portions of Allamakee, Clayton, Dubuque and Jackson counties. On the other hand, sites outside of the river valley subdivisions previously represented by meteorological data collected at a site within the river valley can expect a decrease in long-term concentration on average. This includes the non-Mississippi River portions of Clinton and Scott counties; the non-Missouri River valley portions of Fremont, Harrison, Mills, Monona, Pottawattamie and Woodbury counties; and all of Montgomery, Page and Shelby counties.

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Appendix A – Meteorological Observation Station Information

This appendix contains information about the various meteorological observation stations used in the processing of the meteorological data for AERMOD.

Two maps are provided depicting the locations of all of the surface stations used in the representivity analysis and the processing of the AERMOD meteorological data. One of these maps includes county names while the other includes terrain elevations for the State of Iowa. On the terrain map, the sites that are located in river valleys are highlighted (not an indication of the valley's influence on the meteorological observations at that location). The aerial photographs used to determine the locations of all surface and upper air sites used in the processing of the AERMOD meteorological data follow these maps. Finally, station summary information is provided for each surface station.

The upper left corner of each surface station summary includes the station identifiers, anemometer height, 1-minute data availability date, ice-free winds (IFW) commission date, location information and the confidence of the location.

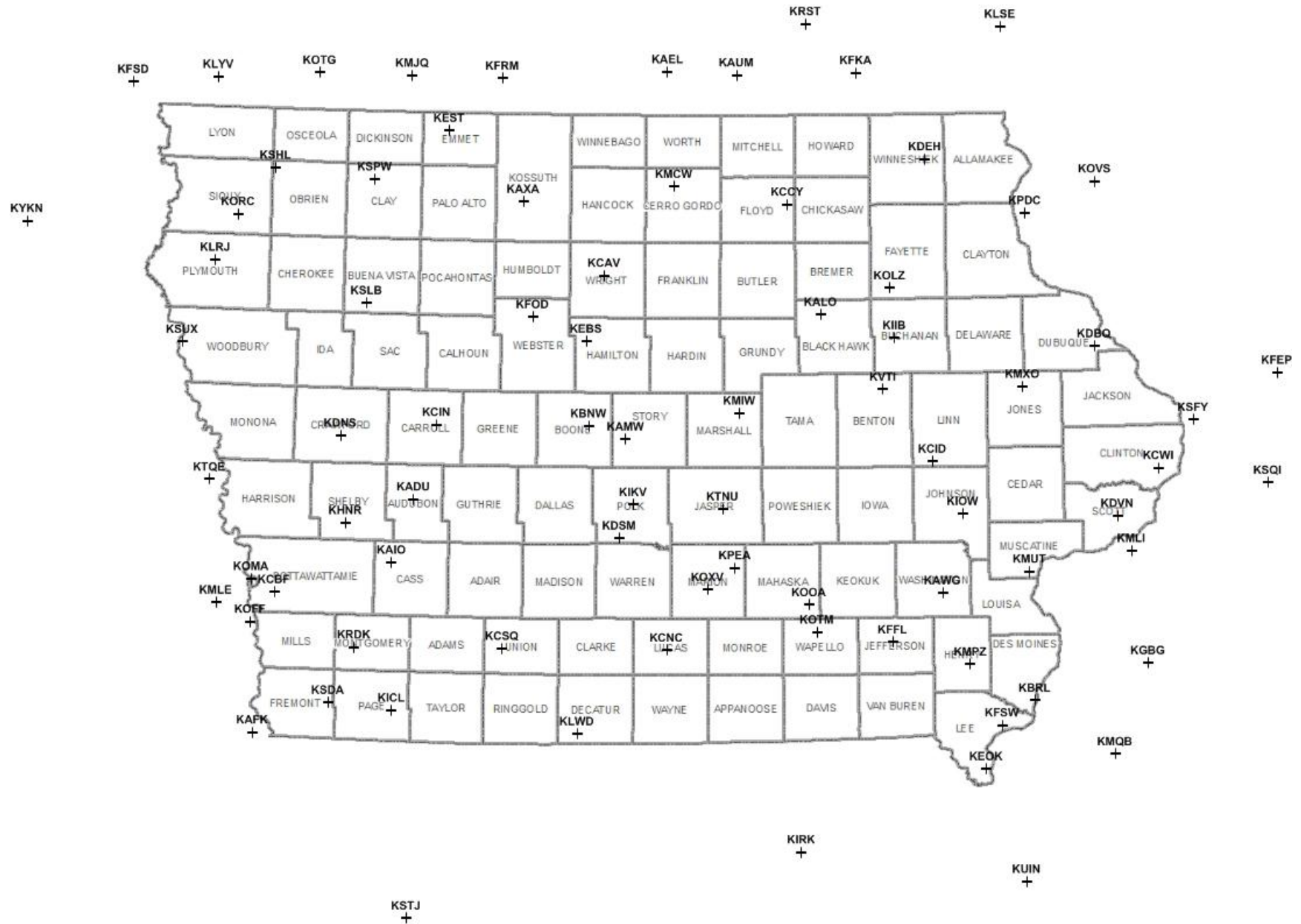
The Weather Bureau Army Navy (WBAN) and World Meteorological Organization (WMO) identifiers, as well as the data availability dates were obtained from the raw data. The anemometer heights for all ASOS sites were based on the data available on the National Weather Service's website. The location information was determined by examining aerial photography from online sources such as Google Earth, Bing Maps and the Iowa Geographic Image Map Server. Depending on the quality of the aerial photographs available for each area, the confidence in the location of the meteorological instruments varied from high to low. If the meteorological instrument was readily visible in a high-resolution aerial photograph, the coordinates were based on the actual location of the instrument, and the confidence was set to high. If an object appearing to be the meteorological instrument was observed in a low resolution aerial photograph, the coordinates were based on the location of the object appearing to be the instrument, and the confidence was set to medium. In the case where no meteorological instrument was observable in any aerial photograph, the coordinates were an estimate, based on an open area where an instrument could be located near the center of the runway(s), and the confidence was set to low.

The wind rose for each site is provided in the upper right corner of each station summary. This wind rose is based on the raw data prior to any data filling and does not include the 1-minute wind data.

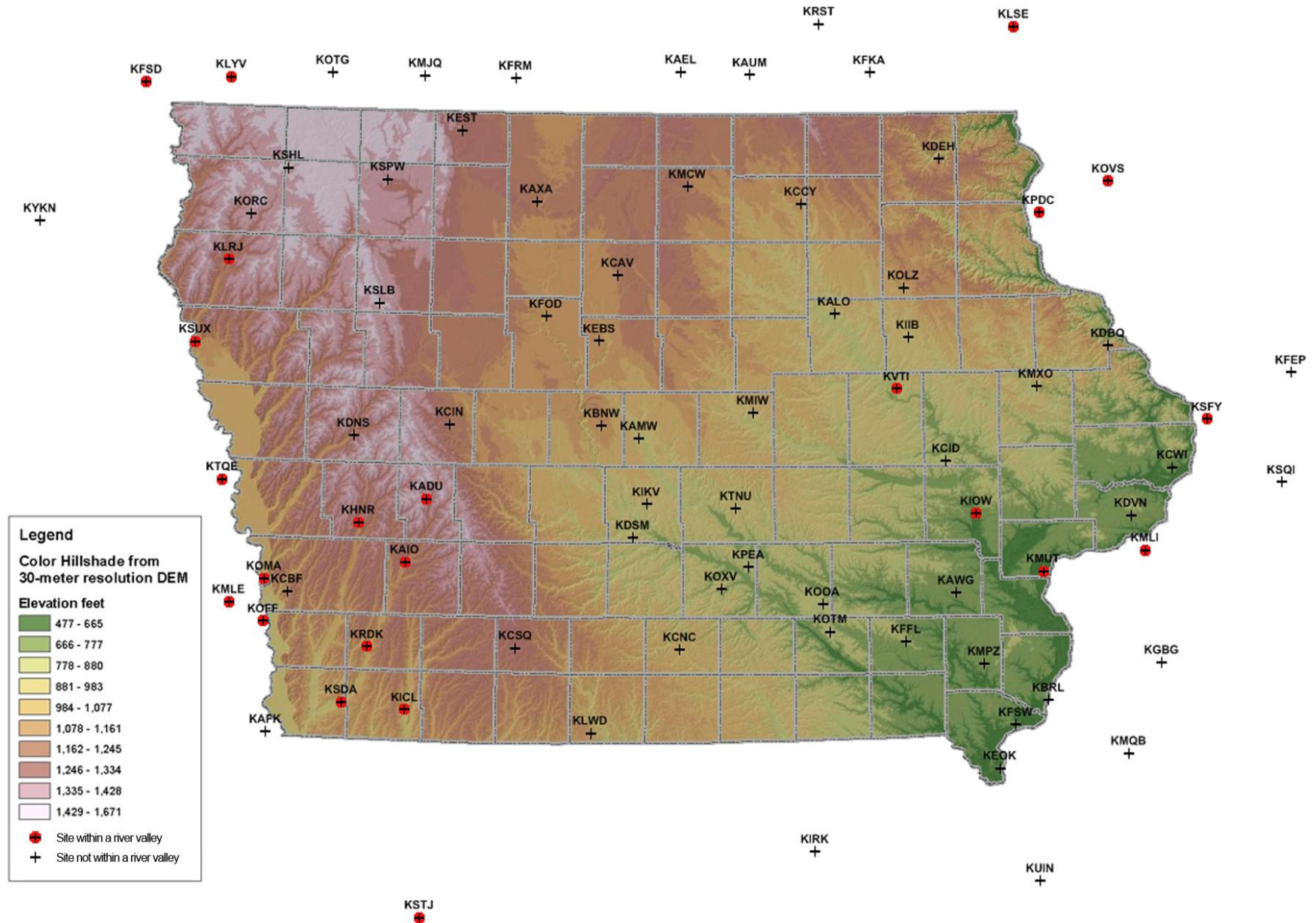
In the center of each station summary is a map depicting the level of representativeness of that station to other areas of the state, and a list of the most closely correlated nearby sites. Areas of the state shaded in blue and green have a distance-weighted correlation coefficient of 0.9 and 0.8 respectively. Stations that were included in the AERMOD meteorological dataset are bolded in the list of most representative sites.

At the bottom of each station summary is a quarterly inventory of the raw Integrated Surface Hourly (ISH) data. Only the variables required by AERMET are shown. All data not meeting the 90% data completeness criterion are highlighted in red. Note that in some instances the 1-minute wind data or collocated data from another source were used to supplement the raw ISH data to qualify it for use.

Surface Station Location Map - Counties



Surface Station Location Map – Terrain



Aerial Photographs - Surface Observation Stations

Ames, IA (KAMW)

Overview



Close-up



Burlington, IA (KBRL)

Overview



Close-up

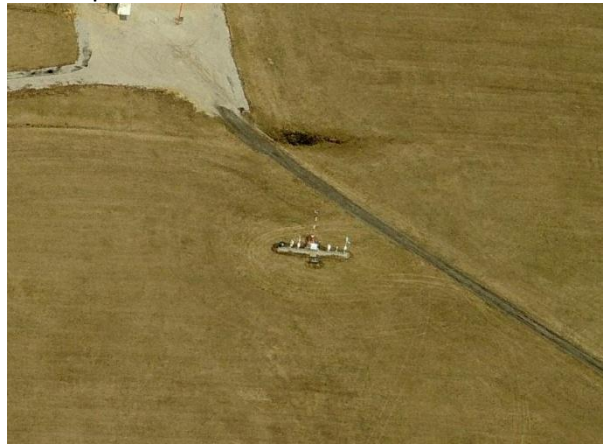


Cedar Rapids, IA (KCID)

Overview



Close-up



Davenport, IA (KDVN)

Overview



Close-up



Des Moines, IA (KDSM)

Overview



Close-up

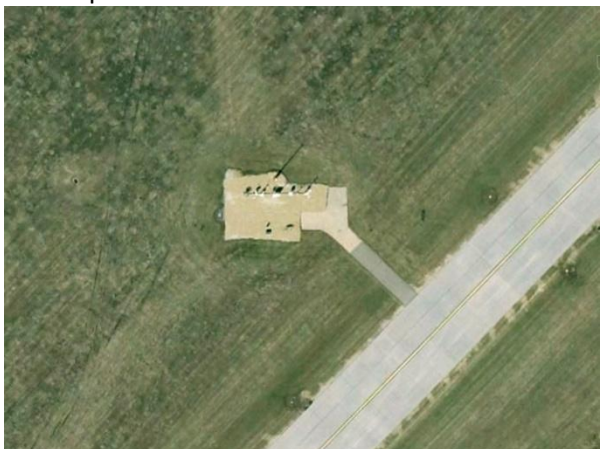


Dubuque, IA (KDBQ)

Overview



Close-up



Estherville, IA (KEST)

Overview



Close-up



Iowa City, IA (K1OW)

Overview

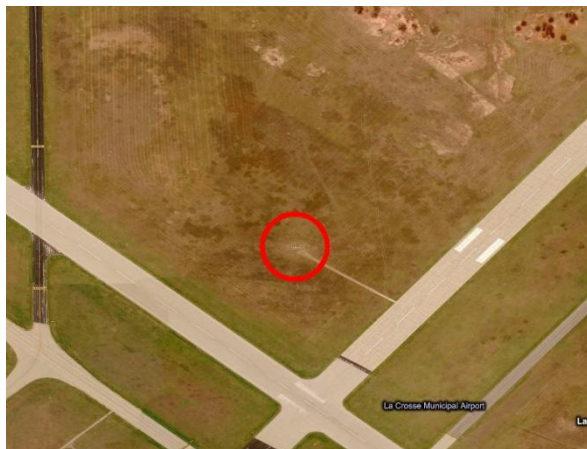


Close-up



La Crosse, WI (KLSE)

Overview

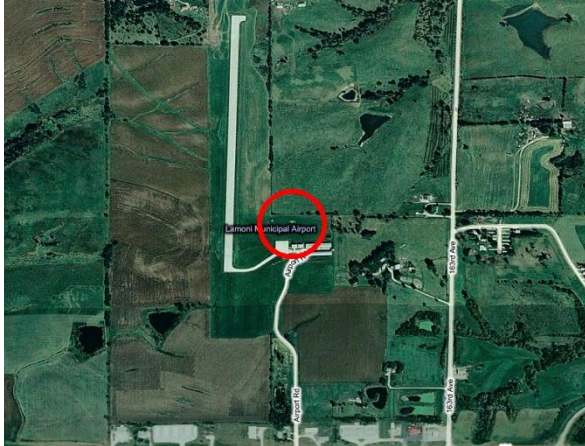


Close-up



Lamoni, IA (KLWD)

Overview



Close-up



Marshalltown, IA (KMIW)

Overview



Close-up



Mason City, IA (KMCW)

Overview



Close-up

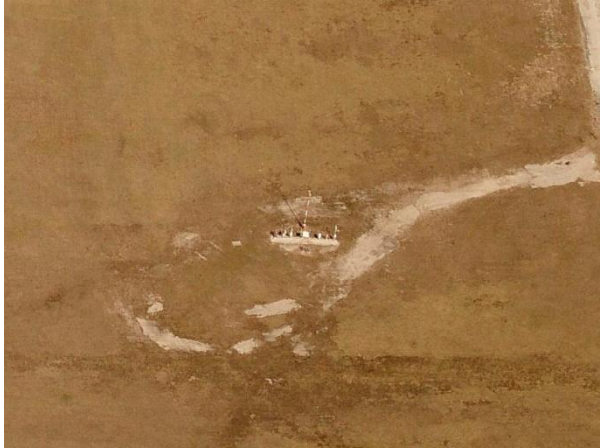


Moline, IL (KMLI)

Overview



Close-up



Omaha, NE (KOMA)

Overview

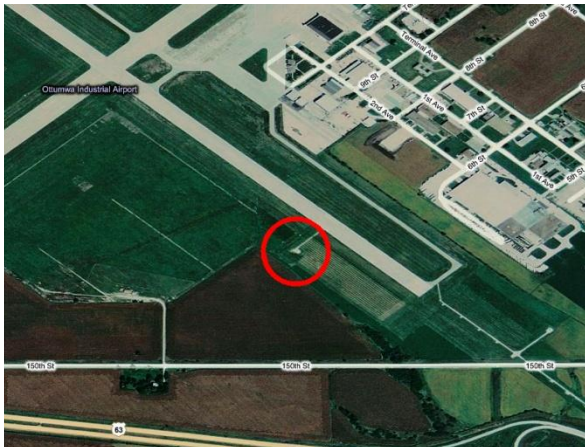


Close-up

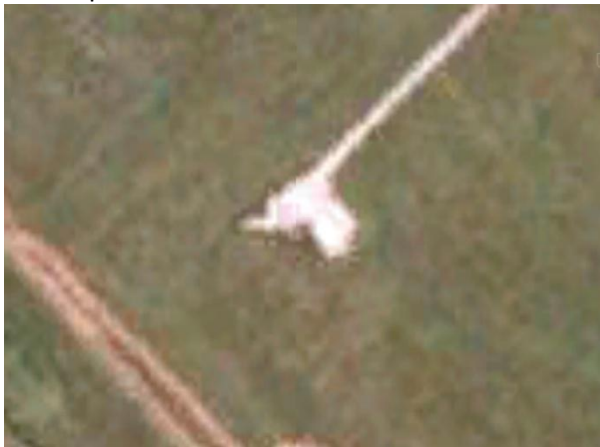


Ottumwa, IA (KOTM)

Overview

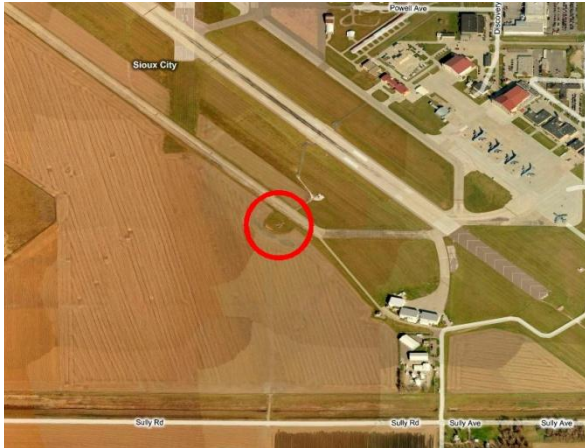


Close-up



Sioux City, IA (KSUX)

Overview



Close-up



Sioux Falls, SD (KFSD)

Overview



Close-up

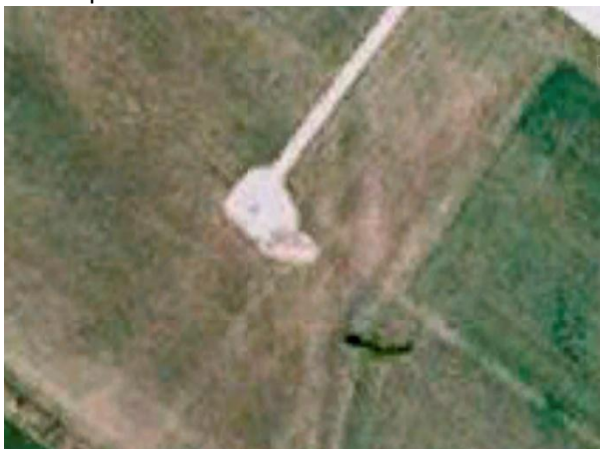


Spencer, IA (KSPW)

Overview

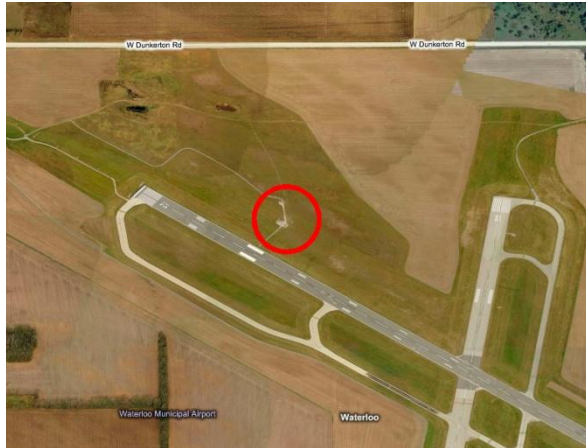


Close-up



Waterloo, IA (KALO)

Overview



Close-up



Aerial Photographs – Upper Air Observation Stations

Davenport, IA (KDVN)

Overview



Close-up



Omaha, NE (KOAX)

Overview



Close-up



Surface Observation Station List

Alphabetically by Call Sign

Call Sign

[KADU](#)

[KAEL](#)

[KAFK](#)

[KAIO](#)

[KALO](#)

[KAMW](#)

[KAUM](#)

[KAWG](#)

[KAXA](#)

[KBNW](#)

[KBRL](#)

[KCAV](#)

[KCBF](#)

[KCCY](#)

[KCID](#)

[KCIN](#)

[KCNC](#)

[KCSQ](#)

[KCWI](#)

[KDBQ](#)

[KDEH](#)

[KDNS](#)

[KDSM](#)

[KDVN](#)

[KEBS](#)

[KEOK](#)

[KEST](#)

[KFEP](#)

[KFFL](#)

[KFKA](#)

[KFOD](#)

[KFRM](#)

[KFSD](#)

[KFSW](#)

[KGBG](#)

[KHNR](#)

[KICL](#)

[KIIB](#)

[KIKV](#)

[KIOW](#)

City

[Audubon](#)

[Albert Lea](#)

[Nebraska City](#)

[Atlantic](#)

[Waterloo](#)

[Ames](#)

[Austin](#)

[Washington](#)

[Algona](#)

[Boone](#)

[Burlington](#)

[Clarion](#)

[Council Bluffs](#)

[Charles City](#)

[Cedar Rapids](#)

[Carroll](#)

[Chariton](#)

[Creston](#)

[Clinton](#)

[Dubuque](#)

[Decorah](#)

[Denison](#)

[Des Moines](#)

[Davenport](#)

[Webster City](#)

[Keokuk](#)

[Estherville](#)

[Freeport](#)

[Fairfield](#)

[Preston](#)

[Fort Dodge](#)

[Fairmont](#)

[Sioux Falls](#)

[Fort Madison](#)

[Galesburg](#)

[Harlan](#)

[Clarinda](#)

[Independence](#)

[Ankeny](#)

[Iowa City](#)

Call Sign

[KIRK](#)

[KLRJ](#)

[KLSE](#)

[KLWD](#)

[KLYV](#)

[KMCW](#)

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[KMUT](#)

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[KOFF](#)

[KOLZ](#)

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[KSTJ](#)

[KSUX](#)

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[KUIN](#)

[KVTI](#)

[KYKN](#)

City

[Kirksville](#)

[Le Mars](#)

[La Crosse](#)

[Lamoni](#)

[Luverne](#)

[Mason City](#)

[Marshalltown](#)

[Jackson](#)

[Millard](#)

[Moline](#)

[Mount Pleasant](#)

[Macomb](#)

[Muscatine](#)

[Monticello](#)

[Offutt](#)

[Oelwein](#)

[Omaha \(Eppley\)](#)

[Oskaloosa](#)

[Orange City](#)

[Worthington](#)

[Ottumwa](#)

[Boscobel](#)

[Knoxville](#)

[Prairie Du Chien](#)

[Pella](#)

[Red Oak](#)

[Rochester](#)

[Shenandoah](#)

[Savanna](#)

[Sheldon](#)

[Storm Lake](#)

[Spencer](#)

[Sterling](#)

[St. Joseph](#)

[Sioux City](#)

[Newton](#)

[Tekamah](#)

[Quincy](#)

[Vinton](#)

[Yankton](#)

Surface Observation Station List

Alphabetically by City

<u>Call Sign</u>	<u>City</u>	<u>Call Sign</u>	<u>City</u>
<u>Albert Lea</u>	<u>KAEL</u>	<u>Le Mars</u>	<u>KLRJ</u>
<u>Algona</u>	<u>KAXA</u>	<u>Luverne</u>	<u>KLYV</u>
<u>Ames</u>	<u>KAMW</u>	<u>Macomb</u>	<u>KMQB</u>
<u>Ankeny</u>	<u>KIKV</u>	<u>Marshalltown</u>	<u>KMIW</u>
<u>Atlantic</u>	<u>KAIO</u>	<u>Mason City</u>	<u>KMCW</u>
<u>Audubon</u>	<u>KADU</u>	<u>Millard</u>	<u>KMLE</u>
<u>Austin</u>	<u>KAUM</u>	<u>Moline</u>	<u>KMLI</u>
<u>Boone</u>	<u>KBNW</u>	<u>Monticello</u>	<u>KMXO</u>
<u>Boscobel</u>	<u>KOVS</u>	<u>Mount Pleasant</u>	<u>KMPZ</u>
<u>Burlington</u>	<u>KBRL</u>	<u>Muscatine</u>	<u>KMUT</u>
<u>Carroll</u>	<u>KCIN</u>	<u>Nebraska City</u>	<u>KAFK</u>
<u>Cedar Rapids</u>	<u>KCID</u>	<u>Newton</u>	<u>KTNU</u>
<u>Chariton</u>	<u>KCNC</u>	<u>Oelwein</u>	<u>KOLZ</u>
<u>Charles City</u>	<u>KCCY</u>	<u>Offutt</u>	<u>KOFF</u>
<u>Clarinda</u>	<u>KICL</u>	<u>Omaha (Eppley)</u>	<u>KOMA</u>
<u>Clarion</u>	<u>KCAV</u>	<u>Orange City</u>	<u>KORC</u>
<u>Clinton</u>	<u>KCWI</u>	<u>Oskaloosa</u>	<u>KOOA</u>
<u>Council Bluffs</u>	<u>KCBF</u>	<u>Ottumwa</u>	<u>KOTM</u>
<u>Creston</u>	<u>KCSQ</u>	<u>Pella</u>	<u>KPEA</u>
<u>Davenport</u>	<u>KDVN</u>	<u>Prairie Du Chien</u>	<u>KPDC</u>
<u>Decorah</u>	<u>KDEH</u>	<u>Preston</u>	<u>KFKA</u>
<u>Denison</u>	<u>KDNS</u>	<u>Quincy</u>	<u>KUIN</u>
<u>Des Moines</u>	<u>KDSM</u>	<u>Red Oak</u>	<u>KRDK</u>
<u>Dubuque</u>	<u>KDBQ</u>	<u>Rochester</u>	<u>KRST</u>
<u>Estherville</u>	<u>KEST</u>	<u>Savanna</u>	<u>KSFY</u>
<u>Fairfield</u>	<u>KFFL</u>	<u>Sheldon</u>	<u>KSHL</u>
<u>Fairmont</u>	<u>KFRM</u>	<u>Shenandoah</u>	<u>KSDA</u>
<u>Fort Dodge</u>	<u>KFOD</u>	<u>Sioux City</u>	<u>KSUX</u>
<u>Fort Madison</u>	<u>KFSW</u>	<u>Sioux Falls</u>	<u>KFSD</u>
<u>Freeport</u>	<u>KFEP</u>	<u>Spencer</u>	<u>KSPW</u>
<u>Galesburg</u>	<u>KGBG</u>	<u>St. Joseph</u>	<u>KSTJ</u>
<u>Harlan</u>	<u>KHNR</u>	<u>Sterling</u>	<u>KSQI</u>
<u>Independence</u>	<u>KIIB</u>	<u>Storm Lake</u>	<u>KSLB</u>
<u>Iowa City</u>	<u>KIOW</u>	<u>Tekamah</u>	<u>KTQE</u>
<u>Jackson</u>	<u>KMJQ</u>	<u>Vinton</u>	<u>KVTI</u>
<u>Keokuk</u>	<u>KEOK</u>	<u>Washington</u>	<u>KAWG</u>
<u>Kirksville</u>	<u>KIRK</u>	<u>Waterloo</u>	<u>KALO</u>
<u>Knoxville</u>	<u>KOXV</u>	<u>Webster City</u>	<u>KEBS</u>
<u>La Crosse</u>	<u>KLSE</u>	<u>Worthington</u>	<u>KOTG</u>
<u>Lamoni</u>	<u>KLWD</u>	<u>Yankton</u>	<u>KYKN</u>

Albert Lea, MN

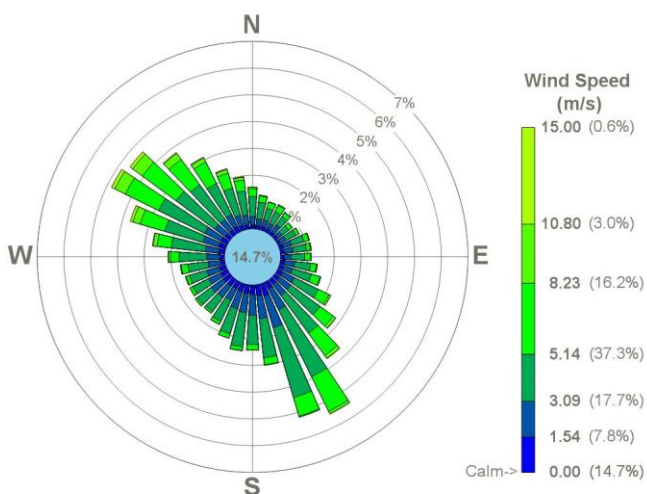
(KAEL)

Station Info

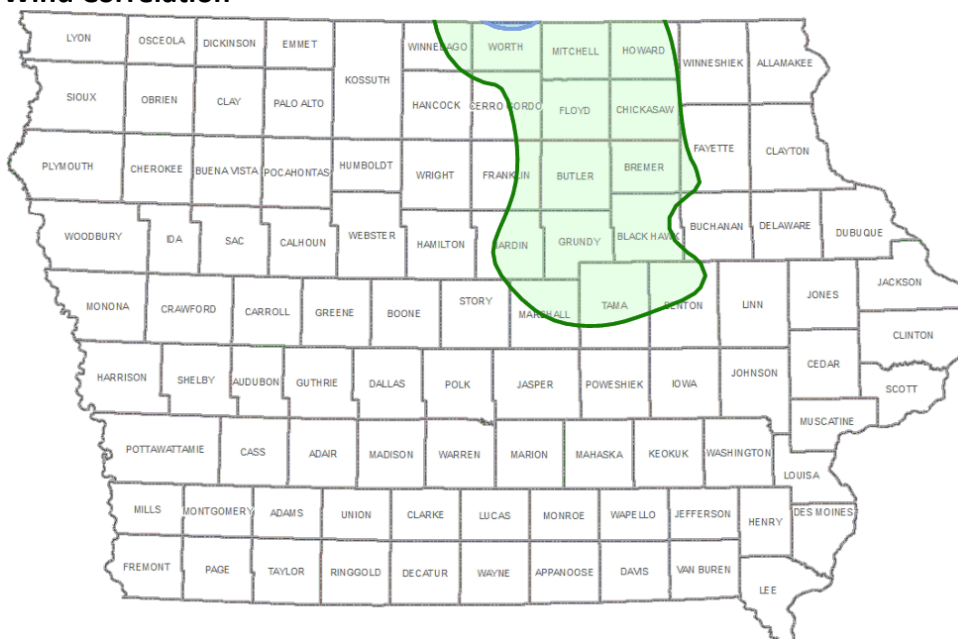
WBAN: 94968
WMO: 726589
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6824 N, 93.3695 W
UTM (NAD83, Z15): 470218.09, 4836665.02
Elevation: 381.9 m
Confidence: Medium



Wind Correlation



Station	Correlation
KAUM	0.891
KCCY	0.842
KVTI	0.814
KMIW	0.811
KALO	0.805
KOLZ	0.804
KMCW	0.795
KFKA	0.786
KBNW	0.781
KEBS	0.780
KIIB	0.774
KAMW	0.771
KMXO	0.763
KTNU	0.762
KMIQ	0.758
KOOA	0.756
KIKV	0.754
KPEA	0.753
KDEH	0.746
KCAV	0.743

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.6%	99.6%	99.5%	99.2%	99.4%	99.6%	99.6%	10.6%
	Q2	99.9%	99.9%	99.5%	99.9%	99.8%	99.9%	99.9%	10.5%
	Q3	98.4%	98.4%	97.7%	97.9%	98.1%	98.2%	98.2%	21.6%
	Q4	99.6%	99.6%	99.5%	99.6%	99.5%	99.6%	99.6%	16.5%
2006	Q1	99.0%	99.0%	98.8%	98.8%	98.8%	99.0%	99.0%	8.7%
	Q2	96.8%	96.8%	91.8%	94.8%	94.6%	95.4%	95.4%	14.6%
	Q3	99.0%	99.0%	97.9%	98.1%	93.8%	98.2%	98.2%	21.2%
	Q4	98.8%	98.8%	98.6%	98.7%	98.8%	98.8%	98.8%	12.0%
2007	Q1	98.6%	98.6%	98.4%	98.3%	98.5%	98.5%	98.5%	9.9%
	Q2	97.8%	97.8%	97.6%	97.8%	97.8%	97.5%	97.5%	10.8%
	Q3	97.6%	97.6%	96.8%	97.4%	97.4%	97.1%	97.1%	20.7%
	Q4	99.3%	99.3%	99.0%	99.2%	99.1%	99.3%	99.3%	12.5%
2008	Q1	97.2%	97.2%	97.0%	97.0%	97.0%	97.1%	97.1%	12.6%
	Q2	99.4%	99.4%	98.6%	99.0%	99.1%	98.2%	98.2%	13.7%
	Q3	97.0%	97.0%	96.6%	96.8%	96.9%	95.7%	95.7%	21.3%
	Q4	98.1%	98.1%	97.8%	97.8%	98.0%	98.0%	98.0%	12.2%
2009	Q1	99.0%	99.0%	98.2%	97.7%	98.3%	98.4%	98.4%	10.3%
	Q2	98.4%	98.4%	98.1%	98.4%	98.4%	98.4%	98.4%	15.4%
	Q3	82.6%	82.6%	81.9%	82.4%	82.3%	82.6%	82.6%	26.1%
	Q4	96.2%	96.2%	96.0%	96.1%	95.8%	96.1%	96.1%	11.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Algona, IA

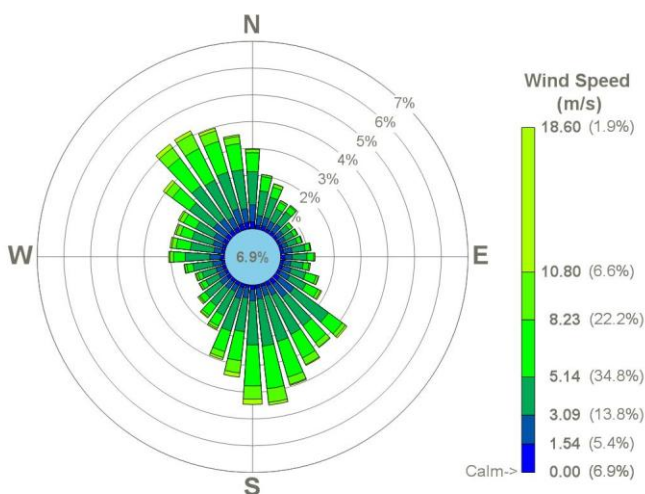
(KAXA)

Station Info

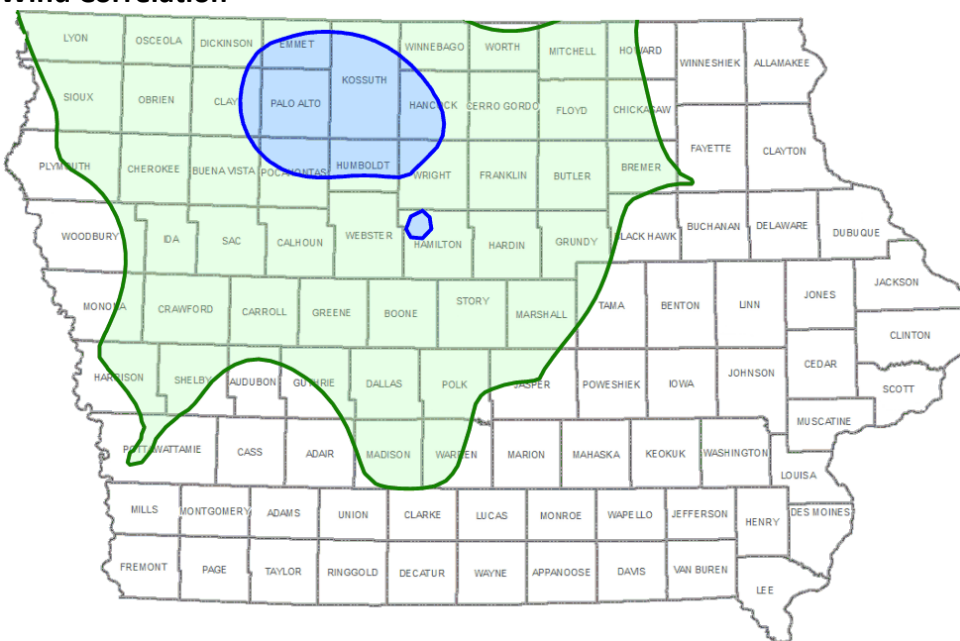
WBAN: NA
WMO: 725457
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.0798 N, 94.2741 W
UTM (NAD83, Z15): 396422.17, 4770439.91
Elevation: 370.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KEBS	0.909
KEST	0.898
KCAV	0.892
KSPW	0.887
KMJQ	0.882
KSHL	0.867
KMCW	0.865
KSLB	0.864
KFOD	0.855
KCCY	0.855
KFRM	0.847
KBNW	0.843
KAMW	0.838
KOTG	0.838
KCIN	0.833
KDNS	0.832
KLYV	0.824
KMIW	0.822
KLRJ	0.817
KDSM	0.815

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.3%	95.3%	94.7%	94.8%	94.8%	94.8%	94.8%	4.9%
	Q2	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	4.7%
	Q3	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	10.0%
	Q4	85.0%	85.0%	84.9%	85.0%	85.0%	85.0%	85.0%	6.7%
2006	Q1	97.8%	97.8%	97.7%	97.8%	97.8%	97.8%	97.8%	4.0%
	Q2	91.6%	91.6%	91.6%	91.6%	91.6%	91.6%	91.6%	5.3%
	Q3	95.4%	95.4%	95.2%	95.3%	95.4%	95.4%	95.4%	12.0%
	Q4	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	5.5%
2007	Q1	91.3%	91.3%	90.8%	90.3%	90.8%	90.8%	90.8%	5.5%
	Q2	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	4.3%
	Q3	92.1%	92.1%	92.0%	92.0%	92.1%	92.1%	92.1%	10.1%
	Q4	89.7%	89.7%	89.6%	89.6%	89.7%	89.7%	89.7%	4.0%
2008	Q1	95.0%	95.0%	94.1%	93.8%	94.1%	94.1%	94.1%	7.2%
	Q2	91.0%	91.0%	91.0%	89.9%	91.0%	91.0%	91.0%	5.3%
	Q3	79.7%	79.7%	79.6%	79.7%	79.7%	79.7%	79.7%	10.2%
	Q4	72.7%	72.7%	72.7%	72.7%	72.7%	72.7%	72.7%	4.8%
2009	Q1	97.8%	97.8%	97.5%	97.3%	97.5%	97.5%	97.5%	4.5%
	Q2	97.1%	97.1%	97.1%	97.0%	97.1%	97.1%	97.1%	6.2%
	Q3	99.2%	99.2%	99.1%	99.2%	99.2%	99.2%	99.2%	17.5%
	Q4	93.4%	93.4%	93.1%	92.7%	93.1%	93.1%	93.1%	5.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

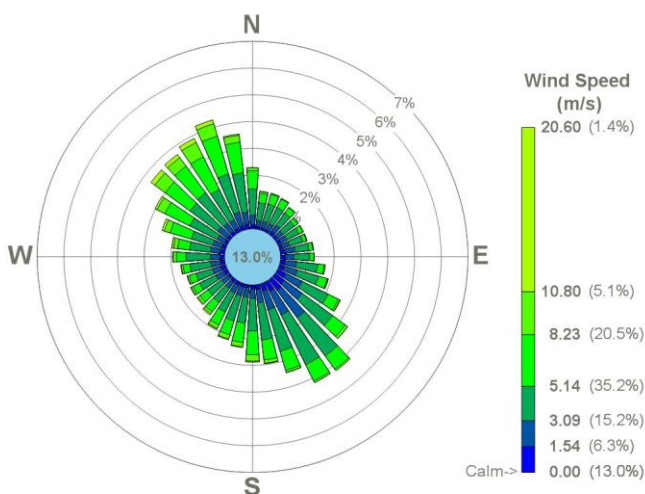
Ames, IA (KAMW)

Station Info

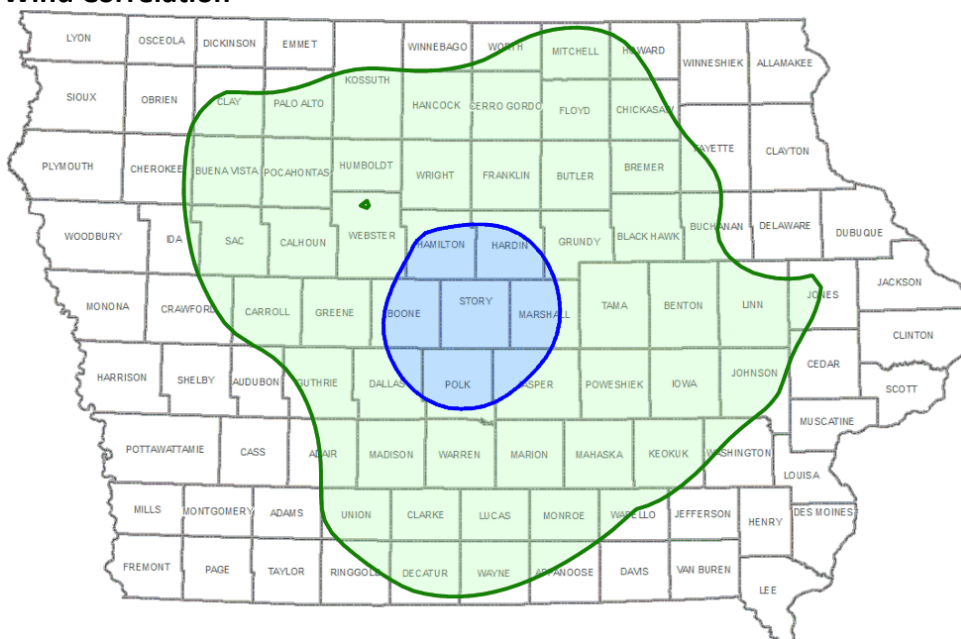
WBAN: 94989
WMO: 725472
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/27/2005

Location Info

Lat-Long: 41.9904 N, 93.6185 W
UTM (NAD83, Z15): 448769.50, 4648895.34
Elevation: 280.4 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KBNW	0.931
KIKV	0.915
KMIW	0.900
KDSM	0.897
KEBS	0.897
KTNU	0.885
KOXV	0.869
KCIN	0.857
KCCY	0.852
KOOA	0.849
KCNC	0.848
KPEA	0.844
KAXA	0.838
KOLZ	0.837
KCAV	0.833
KALO	0.829
KCSQ	0.823
KSLB	0.815
KMCW	0.812
KVTI	0.811

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.0%	99.0%	1.6%	95.0%	95.0%	93.9%	94.9%	12.1%
	Q2	99.8%	99.8%	1.2%	99.6%	99.8%	98.4%	99.8%	7.6%
	Q3	99.0%	99.0%	3.7%	97.9%	97.6%	95.4%	98.3%	18.8%
	Q4	98.3%	98.3%	1.3%	97.7%	97.8%	97.3%	97.8%	10.7%
2006	Q1	95.7%	95.7%	2.6%	95.6%	95.3%	95.3%	95.6%	6.3%
	Q2	99.1%	99.1%	0.8%	99.0%	99.1%	97.8%	99.0%	11.5%
	Q3	99.5%	99.5%	1.5%	99.3%	99.5%	96.9%	99.4%	18.2%
	Q4	98.3%	98.3%	1.2%	98.3%	98.3%	98.0%	98.2%	11.9%
2007	Q1	97.0%	97.0%	1.9%	96.9%	97.0%	96.7%	96.9%	7.2%
	Q2	97.3%	97.3%	1.6%	97.1%	97.2%	95.5%	97.0%	10.1%
	Q3	97.1%	97.1%	1.4%	97.0%	97.1%	95.1%	96.6%	17.6%
	Q4	98.6%	98.6%	1.0%	98.5%	98.6%	98.3%	98.5%	9.5%
2008	Q1	89.0%	89.0%	1.5%	88.8%	88.6%	88.7%	88.8%	9.8%
	Q2	98.5%	98.5%	0.8%	97.9%	98.0%	97.0%	98.1%	9.4%
	Q3	98.0%	98.0%	0.7%	97.4%	97.9%	94.9%	97.2%	24.2%
	Q4	99.9%	99.9%	0.5%	99.7%	99.9%	99.4%	99.9%	12.1%
2009	Q1	99.0%	99.0%	1.7%	98.9%	98.2%	98.4%	98.9%	8.8%
	Q2	99.6%	99.6%	0.5%	99.0%	99.3%	98.0%	99.5%	14.3%
	Q3	99.5%	99.5%	1.0%	99.5%	99.5%	97.6%	99.5%	28.3%
	Q4	99.2%	99.2%	1.5%	99.0%	99.2%	99.0%	99.1%	10.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

NOTE: 65 hours of collocated data was found to replace whole missing records for Q1 of 2008, which qualifies it to meet the 90% criterion.

Ankeny, IA

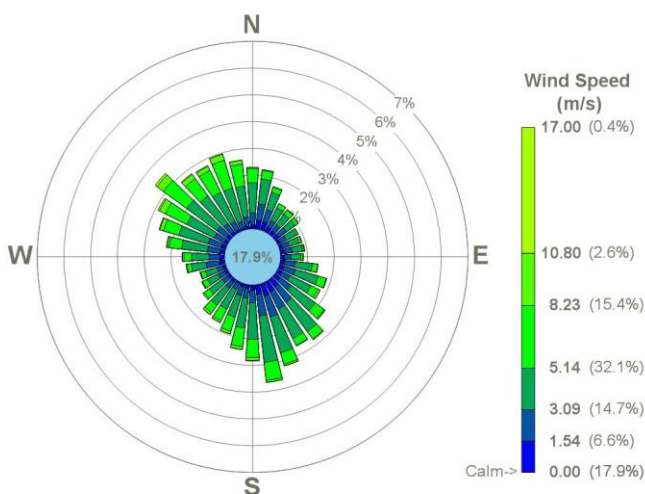
(KIKV)

Station Info

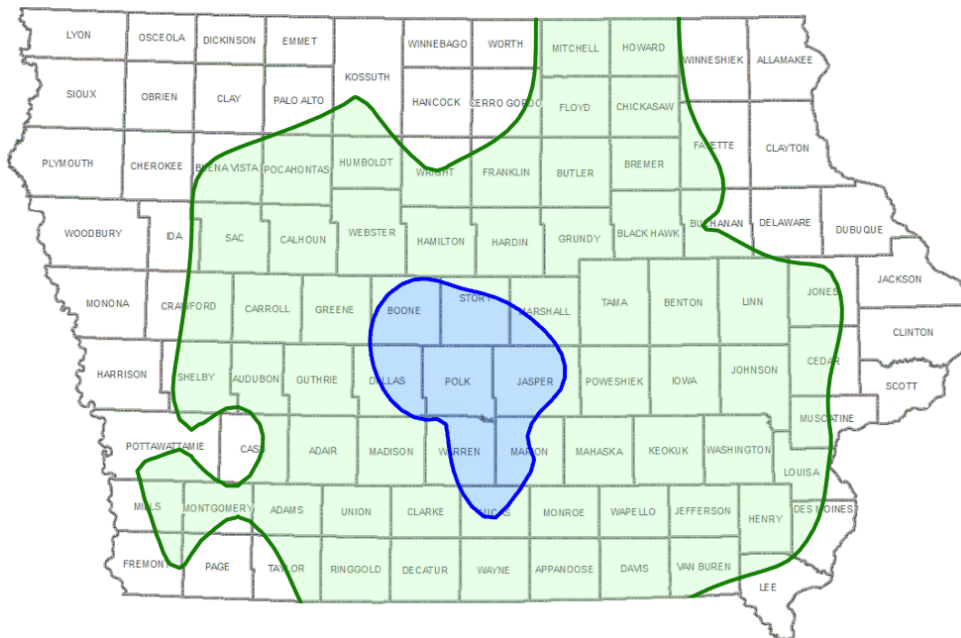
WBAN: NA
WMO: 725466
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.6878 N, 93.5695 W
UTM (NAD83, Z15): 452605.44, 4615270.63
Elevation: 270.7 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KTNU	0.921
KBNW	0.919
KAMW	0.915
KOXV	0.907
KCNC	0.903
KDSM	0.900
KEBS	0.872
KMIW	0.867
KOOA	0.865
KCSQ	0.856
KPEA	0.855
KCIN	0.855
KLWD	0.848
KOTM	0.845
KAWG	0.844
KCCY	0.843
KOLZ	0.839
KMPZ	0.837
KVTI	0.837
KFFL	0.836

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.1%	96.1%	96.0%	95.3%	95.6%	96.0%	96.0%	15.6%
	Q2	96.3%	96.3%	95.6%	95.3%	95.7%	95.7%	95.7%	15.5%
	Q3	96.2%	96.2%	96.0%	95.9%	96.2%	96.2%	96.2%	28.9%
	Q4	76.0%	76.0%	73.6%	73.2%	72.8%	73.6%	73.6%	14.0%
2006	Q1	85.7%	85.7%	85.7%	85.6%	85.7%	85.7%	85.7%	11.4%
	Q2	81.1%	81.1%	81.1%	80.4%	81.1%	81.1%	81.1%	13.6%
	Q3	98.0%	98.0%	97.9%	97.3%	98.0%	98.0%	98.0%	24.3%
	Q4	89.2%	89.2%	89.1%	88.9%	89.2%	89.2%	89.2%	15.2%
2007	Q1	84.9%	84.9%	84.5%	84.4%	84.5%	84.5%	84.5%	10.5%
	Q2	89.8%	89.8%	89.7%	89.4%	89.6%	89.6%	89.6%	16.6%
	Q3	89.8%	89.8%	89.8%	89.2%	89.4%	89.4%	89.4%	25.4%
	Q4	94.2%	94.2%	94.1%	93.6%	93.3%	93.3%	93.3%	17.1%
2008	Q1	86.9%	86.9%	86.9%	86.7%	86.9%	86.9%	86.9%	12.4%
	Q2	67.8%	67.8%	67.8%	67.7%	67.8%	67.8%	67.8%	10.9%
	Q3	92.8%	92.8%	91.4%	89.4%	91.4%	91.8%	91.8%	30.0%
	Q4	88.6%	88.6%	87.7%	87.5%	87.5%	87.5%	87.5%	16.4%
2009	Q1	96.3%	96.3%	95.9%	95.6%	96.1%	96.3%	96.3%	13.3%
	Q2	95.7%	95.7%	95.7%	95.4%	95.7%	95.7%	95.7%	18.1%
	Q3	99.6%	99.6%	99.6%	99.2%	99.6%	99.6%	99.6%	32.8%
	Q4	98.6%	98.6%	98.4%	97.7%	98.5%	98.5%	98.5%	15.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Atlantic, IA

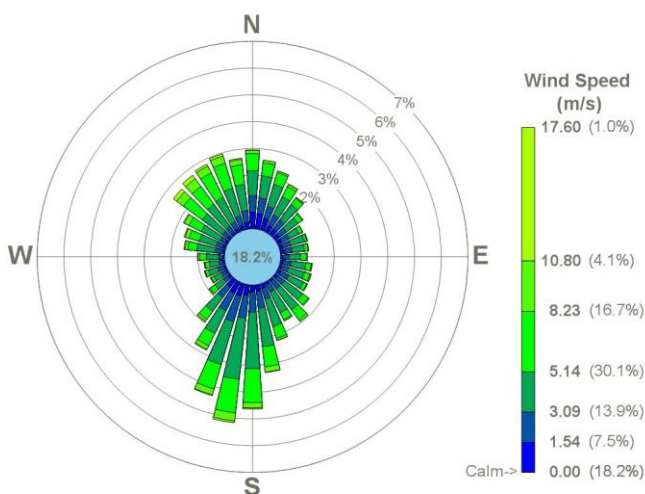
(KAIO)

Station Info

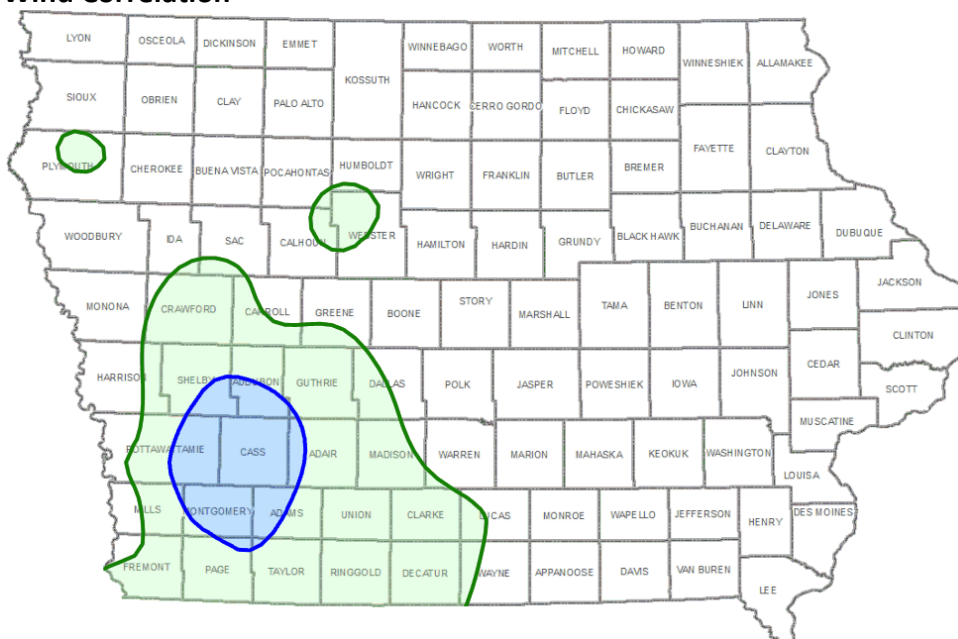
WBAN: 14930
WMO: 725453
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.4046 N, 95.0476 W
UTM (NAD83, Z15): 328941.80, 4585838.37
Elevation: 351.1 m
Confidence: Medium



Wind Correlation



Station	Correlation
KRDK	0.927
KHNR	0.895
KADU	0.892
KICL	0.888
KDNS	0.868
KAFK	0.856
KLRJ	0.853
KCBF	0.839
KCSQ	0.830
KFOD	0.827
KLWD	0.821
KSTJ	0.809
KCNC	0.799
KSDA	0.798
KIKV	0.776
KCIN	0.776
KOXV	0.768
KSLB	0.763
KDSM	0.761
KBNW	0.757

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.3%	95.3%	95.0%	94.9%	95.1%	95.1%	95.1%	18.1%
	Q2	92.0%	92.0%	91.9%	91.8%	91.9%	91.9%	91.9%	11.8%
	Q3	94.5%	94.5%	94.5%	94.4%	94.5%	94.5%	94.5%	25.6%
	Q4	90.9%	90.9%	90.8%	90.9%	90.9%	90.9%	90.9%	18.4%
2006	Q1	93.5%	93.5%	93.5%	93.4%	93.5%	93.5%	93.5%	12.5%
	Q2	92.1%	92.1%	92.1%	92.0%	91.9%	91.9%	91.9%	16.8%
	Q3	95.5%	95.5%	95.4%	95.3%	95.4%	95.4%	95.4%	22.6%
	Q4	85.4%	85.4%	85.4%	83.9%	85.4%	85.4%	85.4%	15.3%
2007	Q1	91.9%	91.9%	91.9%	89.2%	91.9%	91.9%	91.9%	17.2%
	Q2	85.7%	85.7%	85.7%	85.6%	85.7%	85.7%	85.7%	13.0%
	Q3	85.6%	85.6%	84.9%	85.6%	85.6%	85.6%	85.6%	18.5%
	Q4	85.3%	85.3%	85.3%	85.2%	85.3%	85.3%	85.3%	17.2%
2008	Q1	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	17.0%
	Q2	90.7%	90.7%	90.7%	90.6%	90.7%	90.7%	90.7%	16.6%
	Q3	88.8%	88.8%	88.8%	87.7%	88.6%	88.6%	88.6%	25.6%
	Q4	92.4%	92.4%	92.4%	90.6%	92.4%	92.4%	92.4%	17.5%
2009	Q1	96.3%	96.3%	96.3%	96.3%	96.3%	96.3%	96.3%	14.4%
	Q2	88.1%	88.1%	88.1%	88.0%	88.1%	88.1%	88.1%	15.4%
	Q3	98.9%	98.9%	98.9%	97.0%	98.9%	98.9%	98.9%	31.4%
	Q4	98.6%	98.6%	98.6%	98.2%	88.2%	98.6%	98.6%	17.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Audubon, IA

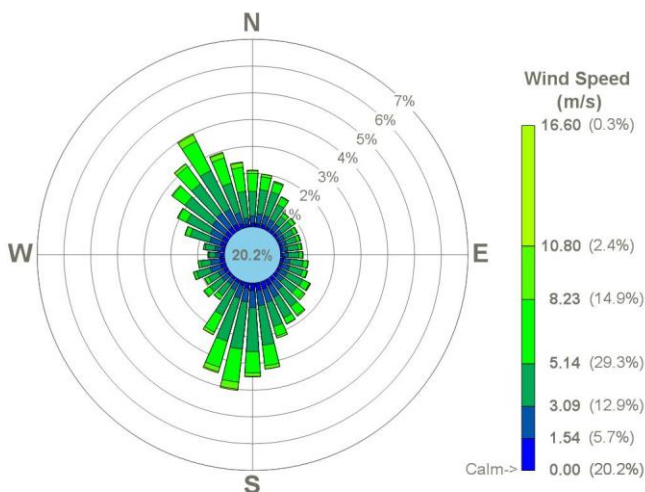
(KADU)

Station Info

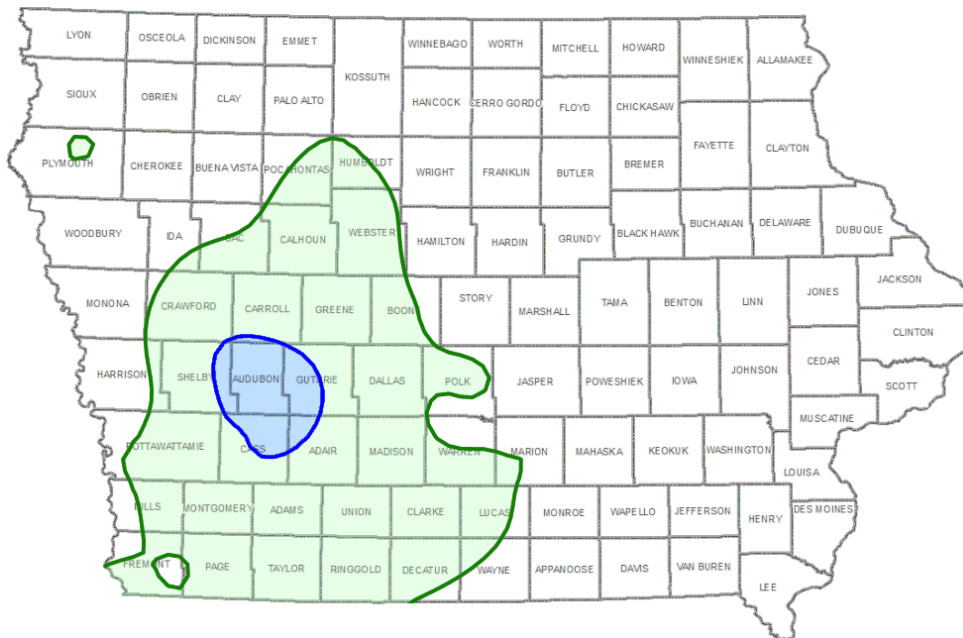
WBAN: NA
WMO: 725498
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.7010 N, 94.9205 W
UTM (NAD83, Z15): 340207.22, 4618183.59
Elevation: 390.4 m
Confidence: Medium



Wind Correlation



Station	Correlation
KRDK	0.898
KAIO	0.892
KDNS	0.862
KCBF	0.860
KFOD	0.854
KHNR	0.850
KCSQ	0.846
KAFK	0.839
KICL	0.833
KIKV	0.822
KLRJ	0.816
KCNC	0.811
KCIN	0.806
KLWD	0.803
KBNW	0.799
KOXV	0.799
KSDA	0.787
KTNU	0.786
KAXA	0.785
KSHL	0.782

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.2%	97.2%	97.1%	97.0%	97.1%	97.1%	97.1%	21.2%
	Q2	49.3%	49.3%	49.3%	49.3%	49.3%	49.3%	49.3%	7.5%
	Q3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	Q4	79.2%	79.2%	79.1%	79.2%	79.2%	79.2%	79.2%	17.1%
2006	Q1	96.0%	96.0%	96.0%	95.9%	96.0%	96.0%	96.0%	15.7%
	Q2	88.2%	88.2%	88.2%	87.8%	88.2%	88.2%	88.2%	17.5%
	Q3	92.9%	92.9%	91.7%	85.1%	91.7%	91.7%	91.7%	27.1%
	Q4	93.1%	93.1%	93.1%	93.0%	93.1%	93.1%	93.1%	22.2%
2007	Q1	92.9%	92.9%	92.8%	92.4%	92.8%	92.8%	92.8%	12.0%
	Q2	84.0%	84.0%	83.9%	83.7%	83.9%	83.9%	83.9%	16.5%
	Q3	88.7%	88.7%	88.7%	88.1%	88.7%	88.7%	88.7%	25.0%
	Q4	89.0%	89.0%	89.0%	88.8%	89.0%	89.0%	89.0%	21.2%
2008	Q1	95.2%	95.2%	95.1%	94.7%	95.1%	95.1%	95.1%	18.7%
	Q2	95.3%	95.3%	95.3%	94.3%	95.3%	95.3%	95.3%	20.7%
	Q3	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	34.0%
	Q4	95.9%	95.9%	95.9%	95.8%	95.9%	95.9%	95.9%	22.1%
2009	Q1	97.4%	97.4%	97.4%	97.2%	97.4%	97.4%	97.4%	16.7%
	Q2	96.5%	96.5%	96.5%	95.8%	96.5%	96.5%	96.5%	21.3%
	Q3	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	41.1%
	Q4	94.4%	94.4%	94.3%	94.0%	94.3%	94.3%	94.3%	25.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Austin, MN

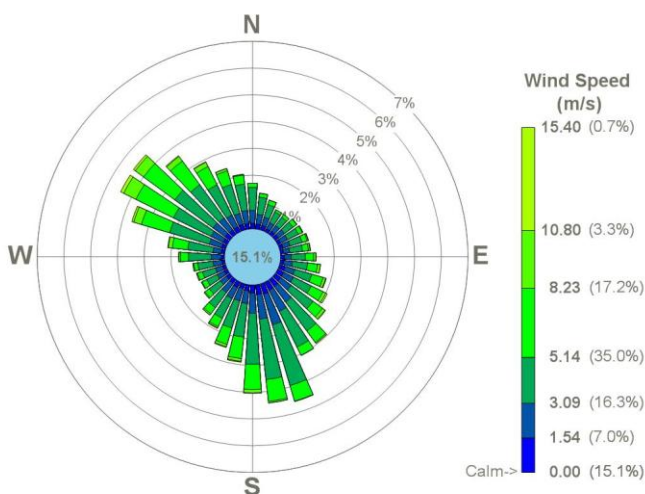
(KAUM)

Station Info

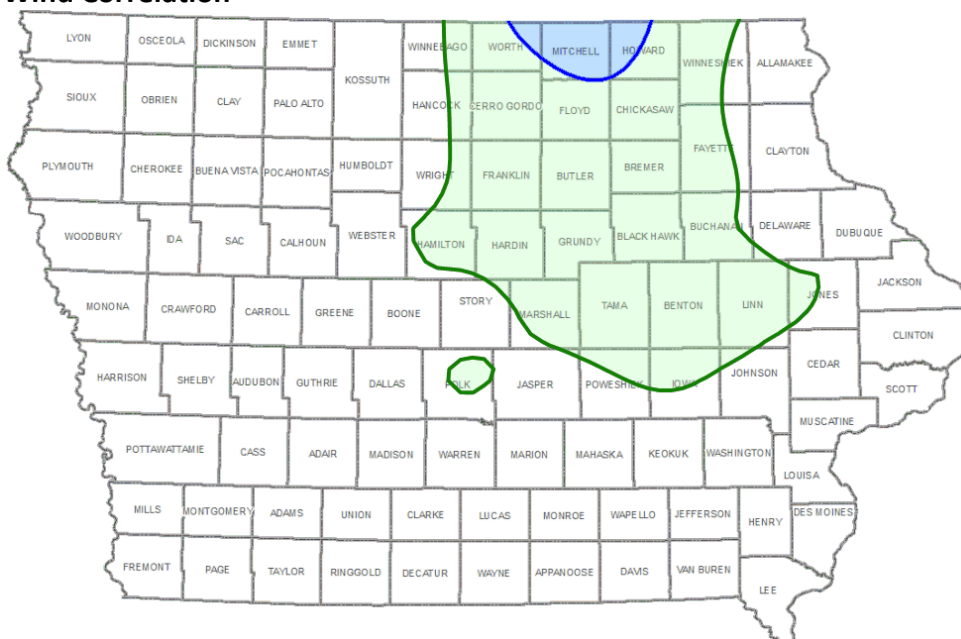
WBAN: 04902
WMO: 727566
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6688 N, 92.9321 W
UTM (NAD83, Z15): 505474.01, 4835090.50
Elevation: 376.4 m
Confidence: Medium



Wind Correlation



Station	Correlation
KFAA	0.895
KAEI	0.891
KCCY	0.886
KOLZ	0.868
KVTI	0.851
KRST	0.846
KALO	0.830
KMCW	0.828
KLSE	0.822
KIKV	0.814
KCID	0.813
KMIW	0.808
KEBS	0.804
KMXO	0.800
KBNW	0.799
KMJQ	0.799
KIIB	0.798
KCAV	0.793
KDEH	0.791
KTNU	0.789

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.8%	99.8%	99.7%	99.7%	99.7%	99.8%	99.8%	9.3%
	Q2	100.0%	100.0%	99.8%	99.9%	99.8%	100.0%	100.0%	10.8%
	Q3	82.2%	82.2%	82.1%	82.0%	82.1%	82.2%	82.2%	17.3%
	Q4	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%	5.6%
2006	Q1	99.4%	99.4%	98.9%	99.2%	99.3%	99.3%	99.3%	6.2%
	Q2	99.2%	99.2%	99.2%	99.1%	99.2%	99.2%	99.2%	14.6%
	Q3	98.6%	98.6%	98.5%	98.0%	98.5%	98.6%	98.6%	18.3%
	Q4	98.9%	98.9%	98.8%	98.7%	98.8%	98.9%	98.9%	31.7%
2007	Q1	98.7%	98.7%	98.4%	98.1%	98.4%	93.3%	93.3%	27.4%
	Q2	98.9%	98.9%	98.4%	98.3%	98.4%	98.6%	98.6%	11.9%
	Q3	96.6%	96.6%	95.7%	94.8%	96.1%	96.1%	96.1%	19.7%
	Q4	98.5%	98.5%	97.5%	97.0%	97.9%	97.9%	97.9%	14.4%
2008	Q1	97.3%	97.3%	96.4%	96.3%	96.7%	96.8%	96.8%	12.3%
	Q2	99.3%	99.3%	99.1%	99.0%	99.1%	99.3%	99.3%	12.5%
	Q3	97.6%	97.6%	97.5%	97.2%	97.6%	97.6%	97.6%	19.5%
	Q4	99.4%	99.4%	99.2%	99.0%	99.2%	99.2%	99.2%	10.7%
2009	Q1	99.0%	99.0%	98.4%	98.2%	98.1%	98.4%	98.4%	8.5%
	Q2	99.0%	99.0%	95.4%	94.2%	95.4%	96.5%	96.5%	13.8%
	Q3	99.9%	99.9%	99.8%	99.5%	93.1%	99.9%	99.9%	27.9%
	Q4	99.5%	99.5%	99.4%	99.5%	99.5%	99.5%	99.5%	10.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Boone, IA

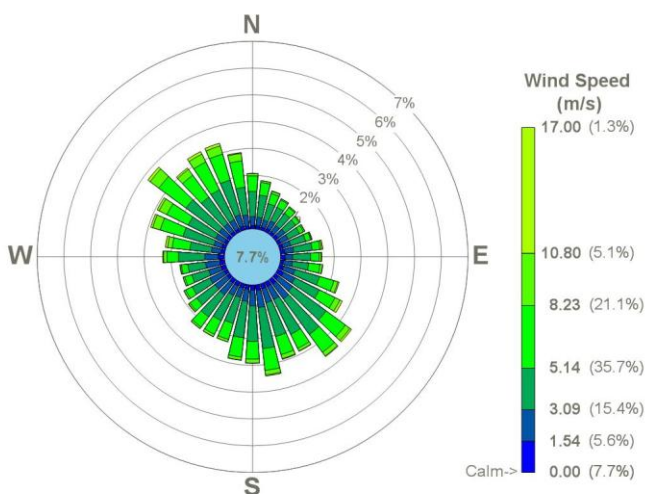
(KBNW)

Station Info

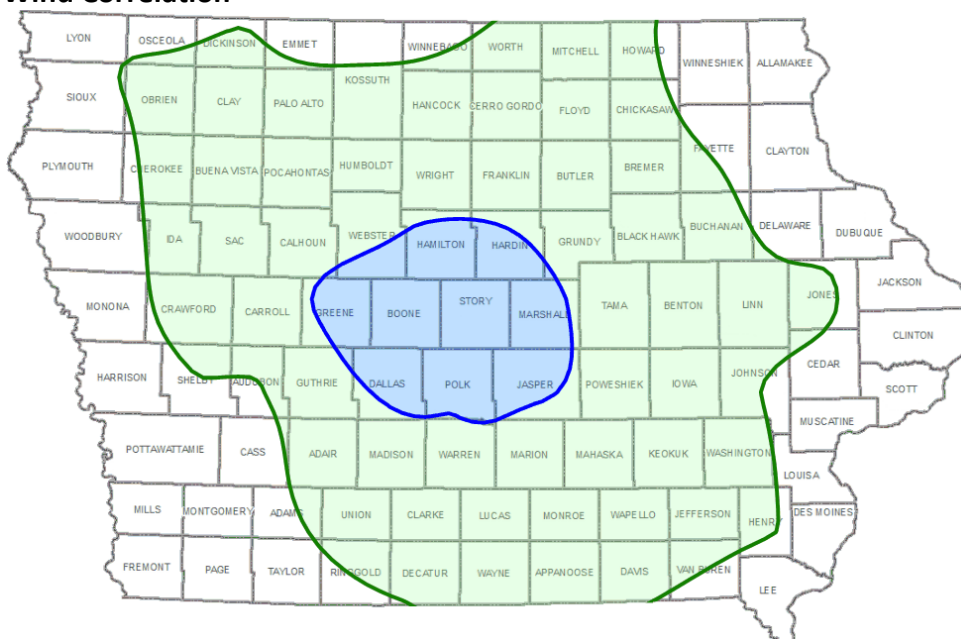
WBAN: NA
WMO: 725486
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.0486 N, 93.8486 W
UTM (NAD83, Z15): 429774.20, 4655520.57
Elevation: 348.4 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KAMW	0.931
KIKV	0.919
KTNU	0.919
KEBS	0.908
KMIW	0.904
KDSM	0.899
KCIN	0.887
KOXX	0.884
KCCY	0.871
KCNC	0.870
KSLB	0.862
KOOA	0.859
KCAV	0.858
KCSQ	0.850
KOLZ	0.848
KAXA	0.843
KALO	0.842
KIIB	0.842
KFOD	0.840
KOTM	0.840

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	91.1%	91.1%	89.2%	89.2%	89.2%	89.2%	89.2%	8.6%
	Q2	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	5.3%
	Q3	92.0%	92.0%	91.9%	91.9%	91.9%	91.9%	91.9%	14.1%
	Q4	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	6.4%
2006	Q1	96.0%	96.0%	95.3%	94.8%	95.5%	95.5%	95.5%	4.0%
	Q2	94.3%	94.3%	94.3%	94.3%	94.3%	94.3%	94.3%	6.2%
	Q3	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	91.3%	10.2%
	Q4	93.6%	93.6%	93.5%	93.5%	93.5%	93.5%	93.5%	5.2%
2007	Q1	83.9%	83.9%	83.8%	83.1%	83.8%	83.8%	83.8%	3.9%
	Q2	91.8%	91.8%	91.7%	91.5%	91.7%	91.7%	91.7%	5.4%
	Q3	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	9.5%
	Q4	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	90.5%	4.0%
2008	Q1	90.1%	90.1%	89.8%	89.5%	89.8%	89.8%	89.8%	5.2%
	Q2	85.6%	85.6%	85.6%	85.6%	85.6%	85.6%	85.6%	7.4%
	Q3	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	14.2%
	Q4	95.0%	95.0%	94.9%	94.8%	95.0%	95.0%	95.0%	6.7%
2009	Q1	96.6%	96.6%	96.6%	96.4%	96.6%	96.6%	96.6%	6.1%
	Q2	90.5%	90.5%	90.4%	90.5%	90.5%	90.5%	90.5%	6.3%
	Q3	94.9%	94.9%	94.9%	94.8%	94.9%	94.9%	94.9%	18.4%
	Q4	94.9%	94.9%	94.6%	93.8%	94.7%	94.7%	94.7%	7.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Boscobel, WI

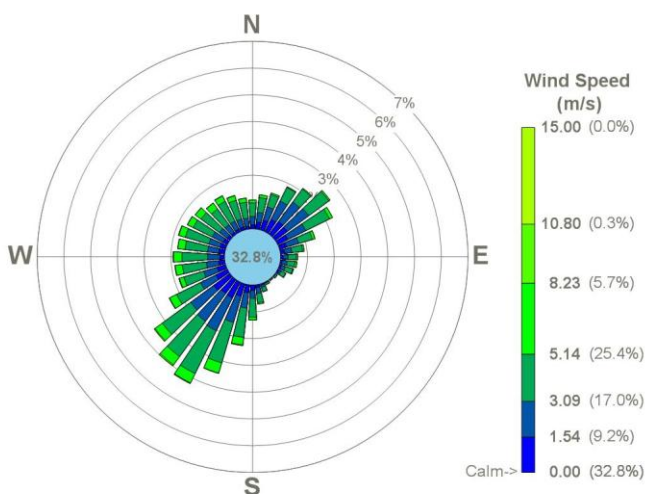
(KOV5)

Station Info

WBAN: 94994
WMO: 726438
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/7/2005

Location Info

Lat-Long: 43.1567 N, 90.6781 W
UTM (NAD83, Z15): 688776.00, 4780833.37
Elevation: 203.0 m
Confidence: Medium



Wind Correlation



Station	Correlation
KFEP	0.614
KEOK	0.570
KIRK	0.563
KDBQ	0.557
KSFY	0.547
KMLI	0.539
KFSW	0.528
KFKA	0.516
KBRL	0.515
KDVN	0.512
KAWG	0.511
KMQB	0.497
KSQI	0.488
KMPZ	0.484
KFFL	0.479
KOXV	0.455
KCWI	0.448
KUIN	0.439
KDEH	0.439
KGBG	0.437

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.5%	99.5%	1.8%	99.4%	99.5%	92.6%	99.4%	26.9%
	Q2	99.7%	99.7%	1.6%	99.6%	99.6%	86.4%	99.6%	27.8%
	Q3	98.9%	98.9%	3.4%	97.0%	97.1%	84.3%	97.1%	38.9%
	Q4	98.3%	98.3%	3.7%	97.6%	97.6%	91.4%	96.0%	28.3%
2006	Q1	96.2%	96.2%	2.9%	94.9%	95.2%	87.9%	93.9%	26.1%
	Q2	96.2%	96.2%	2.9%	94.9%	95.5%	84.1%	93.1%	28.7%
	Q3	99.3%	99.3%	3.0%	99.2%	99.2%	90.0%	99.2%	39.5%
	Q4	98.3%	98.3%	1.8%	97.8%	97.9%	93.1%	97.9%	31.0%
2007	Q1	97.0%	97.0%	2.5%	96.9%	96.9%	93.4%	96.9%	23.6%
	Q2	97.2%	97.2%	2.1%	96.7%	97.0%	87.3%	96.7%	31.3%
	Q3	97.4%	97.4%	4.3%	97.4%	97.4%	89.1%	97.0%	43.6%
	Q4	99.0%	99.0%	2.0%	98.3%	99.0%	94.1%	99.0%	32.5%
2008	Q1	96.7%	96.7%	0.9%	95.8%	96.6%	92.6%	96.6%	32.9%
	Q2	98.4%	98.4%	1.3%	98.0%	98.4%	90.3%	98.3%	25.7%
	Q3	98.9%	98.9%	2.3%	98.5%	98.8%	90.7%	98.4%	45.1%
	Q4	99.1%	99.1%	1.4%	98.9%	99.0%	93.3%	98.9%	31.7%
2009	Q1	98.7%	98.7%	0.7%	98.6%	98.7%	91.9%	98.6%	29.2%
	Q2	99.4%	99.4%	0.8%	99.3%	99.4%	91.0%	99.4%	31.7%
	Q3	99.3%	99.3%	3.3%	97.8%	98.0%	89.9%	98.0%	46.4%
	Q4	99.3%	99.3%	0.9%	97.8%	97.9%	92.2%	98.0%	33.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Burlington, IA

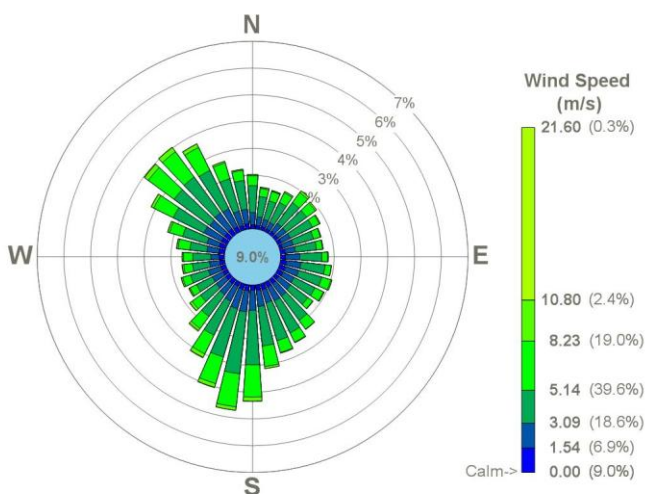
(KBRL)

Station Info

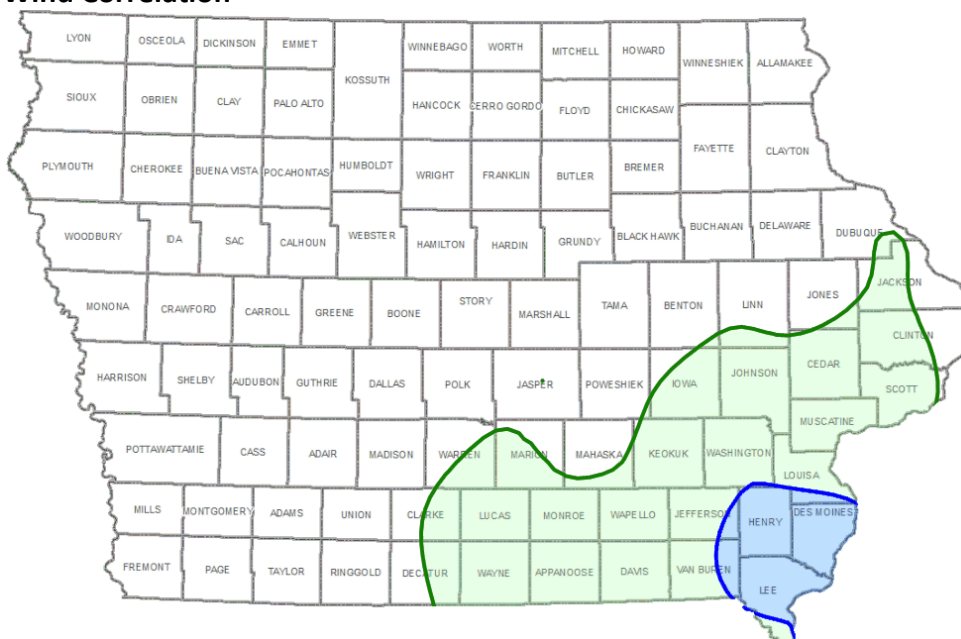
WBAN: 14931
WMO: 725455
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 4/17/2007

Location Info

Lat-Long: 40.7728 N, 91.1254 W
UTM (NAD83, Z15): 658201.07, 4515226.66
Elevation: 209.7 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KMPZ	0.924
KFSW	0.918
KEOK	0.898
KAWG	0.893
KUIN	0.892
KFFL	0.886
KMQB	0.878
KDVN	0.862
KIRK	0.861
KOTM	0.853
KOXV	0.844
KMUT	0.834
KCNC	0.826
KGBG	0.826
KCID	0.814
KDBQ	0.814
KIOW	0.811
KOOA	0.807
KMLI	0.805
KTNU	0.804

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.9%	99.9%	0.6%	96.8%	99.9%	95.8%	97.3%	6.5%
	Q2	100.0%	100.0%	0.0%	99.5%	100.0%	97.3%	100.0%	6.0%
	Q3	100.0%	100.0%	0.2%	98.8%	99.9%	94.6%	100.0%	10.8%
	Q4	100.0%	100.0%	2.4%	96.5%	98.1%	98.7%	99.7%	6.3%
2006	Q1	96.2%	96.2%	1.9%	96.0%	96.2%	94.0%	94.9%	5.8%
	Q2	98.8%	98.8%	1.3%	98.8%	98.8%	95.7%	98.8%	8.0%
	Q3	99.3%	99.3%	1.8%	99.2%	99.2%	95.7%	99.2%	11.0%
	Q4	97.7%	97.7%	1.0%	97.6%	97.6%	97.0%	97.6%	5.4%
2007	Q1	96.7%	96.7%	5.2%	93.0%	93.3%	92.3%	93.3%	4.7%
	Q2	96.6%	96.6%	2.1%	96.3%	96.6%	93.1%	95.4%	10.2%
	Q3	94.2%	94.2%	1.0%	93.4%	94.1%	90.7%	93.4%	14.3%
	Q4	98.7%	98.7%	1.5%	98.4%	98.5%	98.0%	98.5%	8.0%
2008	Q1	96.5%	96.5%	0.7%	96.4%	96.5%	94.8%	95.5%	6.2%
	Q2	99.3%	99.3%	0.7%	99.2%	99.3%	96.8%	97.9%	8.1%
	Q3	98.1%	98.1%	0.8%	98.0%	98.1%	93.3%	95.4%	19.1%
	Q4	99.9%	99.9%	2.6%	98.2%	98.4%	96.9%	97.6%	7.2%
2009	Q1	99.0%	99.0%	0.4%	97.1%	99.0%	98.6%	99.0%	6.3%
	Q2	99.5%	99.5%	0.5%	99.3%	99.5%	98.1%	99.5%	11.3%
	Q3	99.4%	99.4%	0.8%	99.3%	99.4%	94.5%	96.3%	16.8%
	Q4	99.6%	99.6%	0.8%	99.4%	99.6%	99.1%	99.6%	8.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Carroll, IA

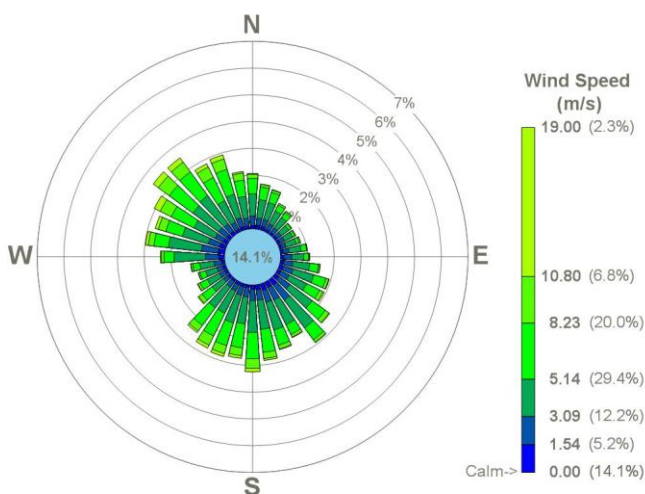
(KCIN)

Station Info

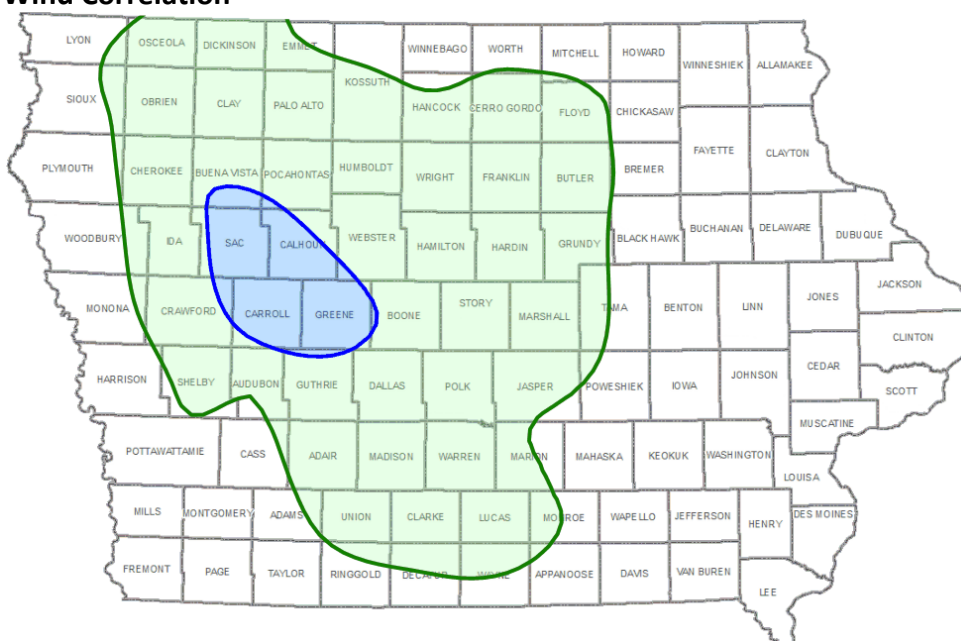
WBAN: NA
WMO: 725468
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.0444 N, 94.7889 W
UTM (NAD83, Z15): 351948.07, 4656254.05
Elevation: 365.5 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KSLB	0.907
KBNW	0.887
KAMW	0.857
KIKV	0.855
KDNS	0.844
KCNC	0.836
KCSQ	0.836
KAXA	0.833
KEBS	0.833
KDSM	0.833
KSPW	0.830
KSHL	0.830
KMIW	0.830
KTNU	0.829
KMCW	0.822
KMJQ	0.822
KOXV	0.820
KFOD	0.813
KHNR	0.812
KADU	0.806

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.5%	97.5%	97.1%	97.0%	97.0%	97.1%	97.1%	12.8%
	Q2	90.7%	90.7%	68.0%	64.1%	68.1%	68.1%	68.1%	7.0%
	Q3	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	21.9%
	Q4	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	10.2%
2006	Q1	97.5%	97.5%	96.6%	96.5%	96.6%	96.6%	96.6%	8.1%
	Q2	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	9.2%
	Q3	96.9%	96.9%	96.9%	96.8%	96.9%	96.9%	96.9%	19.4%
	Q4	90.6%	90.6%	89.7%	89.7%	89.7%	89.7%	89.7%	12.2%
2007	Q1	92.6%	92.6%	92.1%	91.7%	92.1%	92.1%	92.1%	5.4%
	Q2	92.8%	92.8%	92.8%	92.8%	92.8%	92.8%	92.8%	14.5%
	Q3	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	20.1%
	Q4	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	32.9%
2008	Q1	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	9.7%
	Q2	86.7%	86.7%	86.7%	86.7%	86.7%	86.7%	86.7%	8.2%
	Q3	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	22.2%
	Q4	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	10.1%
2009	Q1	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	6.7%
	Q2	65.8%	65.8%	65.8%	65.8%	65.8%	65.8%	65.8%	7.1%
	Q3	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	29.0%
	Q4	97.1%	97.1%	96.9%	96.8%	96.9%	96.9%	96.9%	15.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Cedar Rapids, IA

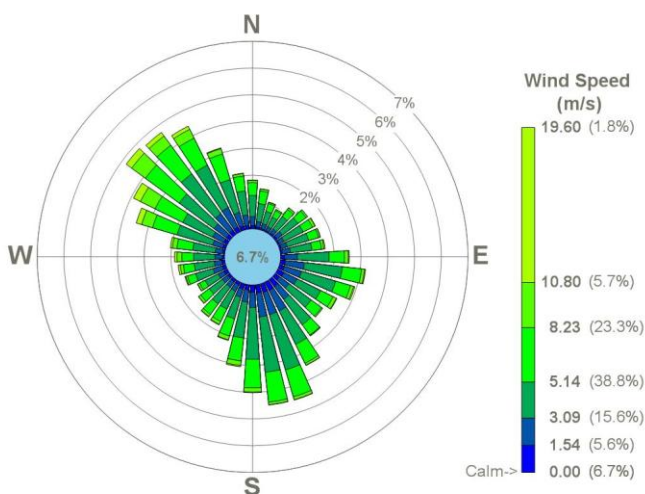
(KCID)

Station Info

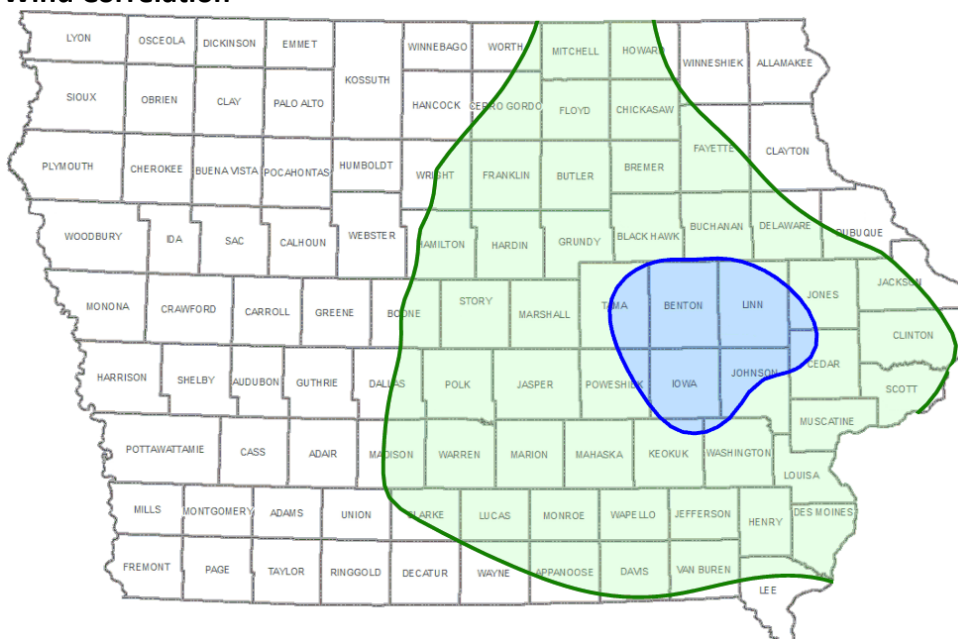
WBAN: 14990
WMO: 725450
Anemometer Height: 7.9 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 4/18/2007

Location Info

Lat-Long: 41.8829 N, 91.7246 W
UTM (NAD83, Z15): 605819.99, 4637561.24
Elevation: 256.3 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KVTI	0.911
KOTM	0.890
KOLZ	0.886
KAWG	0.882
KMIW	0.882
KMUT	0.876
KIIB	0.875
KIOW	0.875
KALO	0.875
KOOA	0.873
KFFL	0.860
KMXO	0.860
KMPZ	0.854
KCCY	0.851
KTNU	0.848
KDVN	0.846
KDSM	0.844
KOXV	0.837
KIKV	0.824
KCWI	0.823

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	0.0%	98.6%	100.0%	98.5%	99.6%	4.6%
	Q2	100.0%	100.0%	0.7%	98.9%	100.0%	98.1%	100.0%	4.7%
	Q3	100.0%	100.0%	0.5%	93.2%	100.0%	96.1%	100.0%	7.8%
	Q4	100.0%	100.0%	0.1%	97.9%	100.0%	99.1%	99.9%	4.7%
2006	Q1	98.2%	98.2%	2.6%	98.2%	98.2%	97.7%	98.2%	2.8%
	Q2	99.1%	99.1%	1.1%	99.1%	99.1%	97.2%	99.1%	5.2%
	Q3	99.5%	99.5%	1.7%	99.3%	99.5%	97.1%	99.3%	6.6%
	Q4	98.7%	98.7%	1.8%	98.6%	98.4%	97.9%	98.6%	3.4%
2007	Q1	96.4%	96.4%	3.7%	95.7%	95.4%	95.4%	95.7%	3.0%
	Q2	97.1%	97.1%	2.0%	96.4%	97.0%	95.4%	97.1%	6.8%
	Q3	97.2%	97.2%	1.4%	97.2%	97.2%	95.4%	96.9%	12.5%
	Q4	99.0%	99.0%	2.3%	99.0%	99.0%	98.6%	98.9%	5.7%
2008	Q1	96.7%	96.7%	2.3%	96.7%	96.7%	96.4%	96.7%	5.9%
	Q2	99.2%	99.2%	2.0%	99.1%	99.1%	97.8%	98.9%	5.2%
	Q3	99.1%	99.1%	1.8%	99.1%	99.1%	96.7%	98.3%	14.6%
	Q4	99.1%	99.1%	2.3%	99.0%	99.0%	97.5%	98.1%	5.6%
2009	Q1	98.8%	98.8%	0.9%	98.8%	98.8%	98.5%	98.8%	4.8%
	Q2	99.5%	99.5%	2.1%	99.0%	99.2%	98.2%	99.2%	9.0%
	Q3	99.5%	99.5%	1.6%	99.5%	99.5%	98.4%	99.5%	14.8%
	Q4	99.2%	99.2%	2.2%	99.0%	99.2%	98.8%	99.1%	6.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Chariton, IA

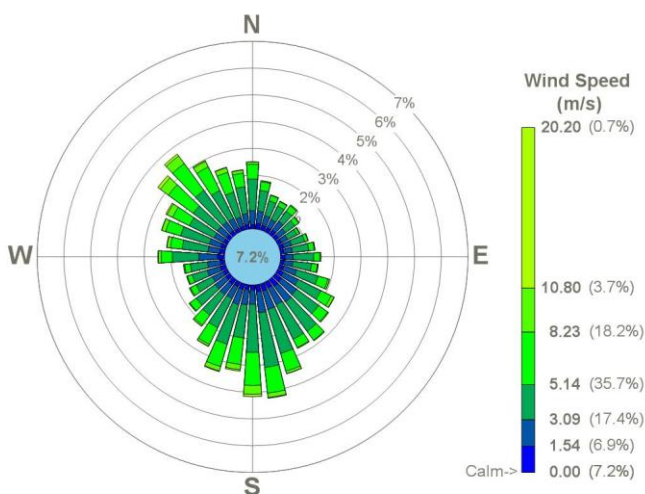
(KCNC)

Station Info

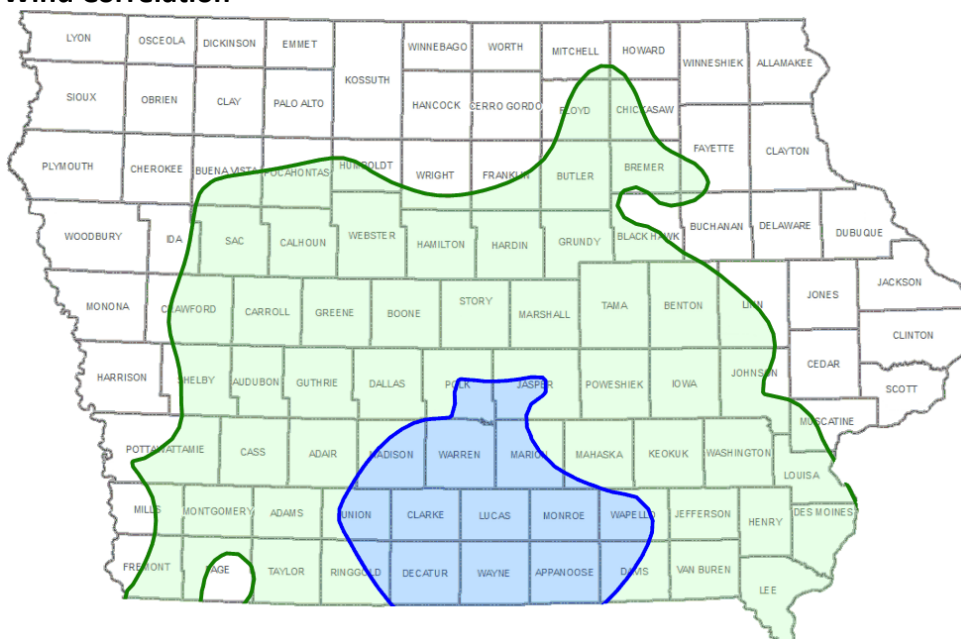
WBAN: NA
WMO: 725469
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.0184 N, 93.3608 W
UTM (NAD83, Z15): 469664.58, 4540862.33
Elevation: 317.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KOXV	0.936
KLWD	0.913
KTNU	0.906
KOTM	0.903
KIKV	0.903
KCSQ	0.903
KDSM	0.896
KFFL	0.891
KOOA	0.889
KAWG	0.877
KMPZ	0.874
KBNW	0.870
KPEA	0.852
KAMW	0.848
KMIW	0.846
KIRK	0.846
KCIN	0.836
KFSW	0.836
KEBS	0.834
KUIN	0.832

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	98.0%	98.0%	97.8%	97.8%	97.9%	97.9%	97.9%	11.0%
	Q2	96.8%	96.8%	96.8%	96.7%	96.8%	96.8%	96.8%	6.8%
	Q3	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	11.0%
	Q4	93.7%	93.7%	93.7%	93.7%	92.6%	93.7%	93.7%	5.8%
2006	Q1	98.7%	98.7%	98.6%	98.6%	98.7%	98.7%	98.7%	4.3%
	Q2	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	6.5%
	Q3	95.7%	95.7%	95.7%	95.5%	95.7%	95.7%	95.7%	11.0%
	Q4	94.9%	94.9%	94.9%	94.4%	94.8%	94.9%	94.9%	4.4%
2007	Q1	91.3%	91.3%	91.3%	90.8%	91.3%	91.3%	91.3%	3.8%
	Q2	94.9%	94.9%	94.9%	94.8%	94.9%	94.9%	94.9%	7.5%
	Q3	86.8%	86.8%	86.8%	86.5%	86.8%	86.8%	86.8%	9.2%
	Q4	90.6%	90.6%	90.6%	90.5%	90.6%	90.6%	90.6%	6.8%
2008	Q1	95.3%	95.3%	95.1%	95.1%	95.3%	95.3%	95.3%	6.4%
	Q2	74.2%	74.2%	74.1%	74.1%	74.2%	74.2%	74.2%	5.2%
	Q3	90.1%	90.1%	90.1%	90.0%	90.1%	90.1%	90.1%	13.0%
	Q4	98.5%	98.5%	98.5%	96.9%	98.5%	98.5%	98.5%	7.7%
2009	Q1	97.2%	97.2%	97.2%	97.2%	97.2%	97.2%	97.2%	5.1%
	Q2	73.8%	73.8%	73.7%	73.7%	73.7%	73.8%	73.8%	6.2%
	Q3	35.1%	35.1%	35.1%	35.1%	35.1%	35.1%	35.1%	7.0%
	Q4	98.9%	98.9%	98.9%	97.8%	98.9%	98.9%	98.9%	5.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Charles City, IA

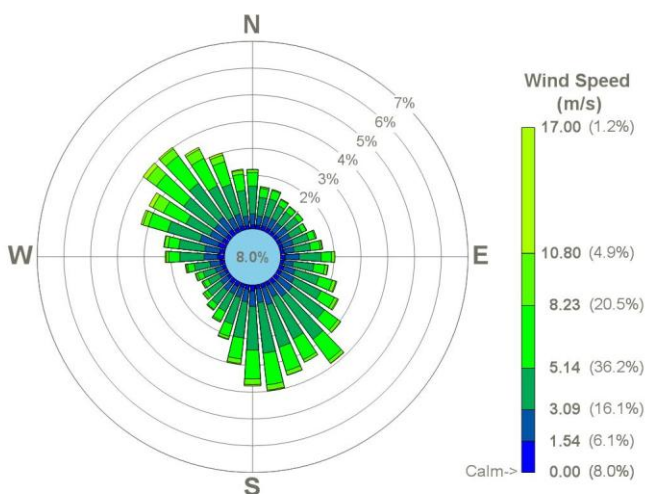
(KCCY)

Station Info

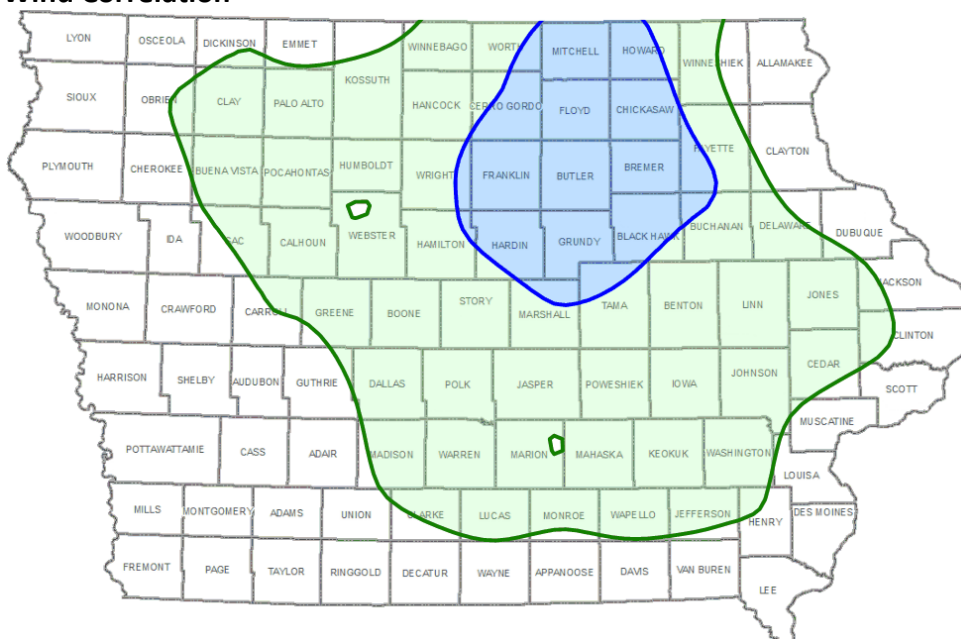
WBAN: 14966
WMO: 725463
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.0730 N, 92.6132 W
UTM (NAD83, Z15): 531490.10, 4768993.97
Elevation: 341.1 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KOLZ	0.938
KALO	0.917
KMIW	0.903
KMCW	0.895
KCAV	0.888
KAUM	0.886
KIIB	0.882
KVTI	0.881
KEBS	0.880
KFKA	0.876
KTNU	0.872
KBNW	0.871
KDSM	0.857
KAXA	0.855
KAMW	0.852
KCID	0.851
KMXO	0.844
KIKV	0.843
KAEL	0.842
KRST	0.840

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	91.2%	91.2%	91.0%	90.7%	90.9%	91.0%	91.0%	6.9%
	Q2	94.0%	94.0%	94.0%	93.9%	94.0%	94.0%	94.0%	4.4%
	Q3	94.3%	94.3%	94.0%	93.6%	94.2%	94.2%	94.2%	14.2%
	Q4	89.1%	89.1%	89.1%	88.8%	89.1%	89.1%	89.1%	9.2%
2006	Q1	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	3.6%
	Q2	93.3%	93.3%	93.3%	93.1%	93.3%	93.3%	93.3%	7.8%
	Q3	93.6%	93.6%	93.5%	93.3%	93.6%	93.6%	93.6%	12.7%
	Q4	94.9%	94.9%	94.9%	94.7%	94.9%	94.9%	94.9%	4.8%
2007	Q1	84.9%	84.9%	84.9%	83.3%	84.9%	84.9%	84.9%	4.9%
	Q2	94.0%	94.0%	94.0%	93.9%	94.0%	94.0%	94.0%	6.1%
	Q3	90.7%	90.7%	90.6%	90.7%	90.7%	90.7%	90.7%	12.3%
	Q4	91.7%	91.7%	91.7%	91.6%	91.7%	91.7%	91.7%	6.2%
2008	Q1	91.5%	91.5%	91.5%	90.7%	91.5%	91.5%	91.5%	8.0%
	Q2	93.2%	93.2%	93.2%	93.1%	93.2%	93.2%	93.2%	6.5%
	Q3	92.2%	92.2%	92.1%	91.6%	92.2%	92.2%	92.2%	11.7%
	Q4	98.3%	98.3%	98.2%	97.6%	98.2%	98.2%	98.2%	6.2%
2009	Q1	91.1%	91.1%	91.1%	90.6%	91.1%	91.1%	91.1%	5.1%
	Q2	89.4%	89.4%	89.4%	89.1%	89.4%	89.4%	89.4%	7.5%
	Q3	98.7%	98.7%	98.6%	98.3%	98.7%	98.7%	98.7%	16.8%
	Q4	96.0%	96.0%	95.9%	95.7%	95.9%	95.9%	95.9%	4.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Clarinda, IA

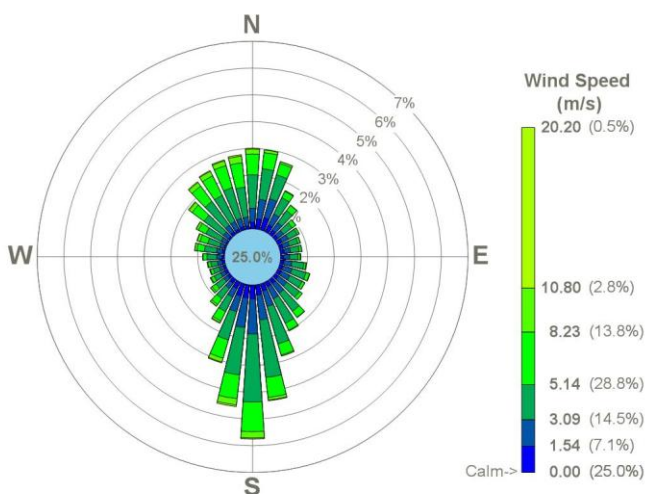
(KICL)

Station Info

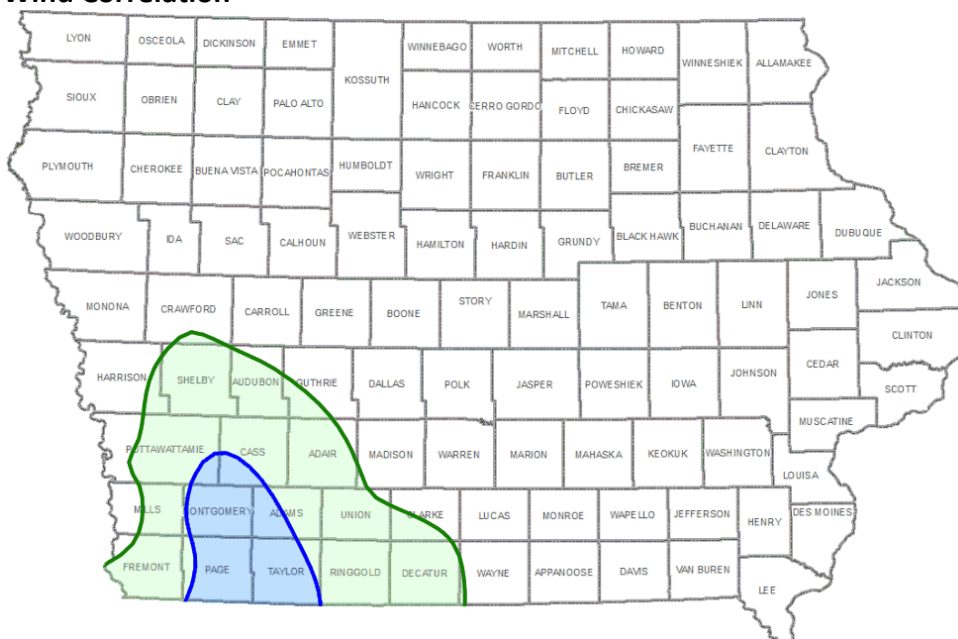
WBAN: NA
WMO: 725479
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.7244 N, 95.0259 W
UTM (NAD83, Z15): 328905.61, 4510137.49
Elevation: 301.8 m
Confidence: Low



Wind Correlation



Station Correlation

Station	Correlation
KRDK	0.933
KAIO	0.888
KHNR	0.874
KAFK	0.861
KSTJ	0.859
KSDA	0.848
KLWD	0.837
KADU	0.833
KCSQ	0.813
KCBF	0.813
KDNS	0.791
KLRJ	0.790
KCNC	0.783
KIKV	0.770
KFOD	0.769
KDSM	0.736
KTNU	0.732
KOXV	0.728
KORC	0.726
KLYV	0.721

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.3%	96.3%	96.3%	96.2%	96.2%	96.3%	96.3%	20.6%
	Q2	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	16.6%
	Q3	96.5%	96.5%	96.4%	96.4%	96.5%	96.5%	96.5%	35.1%
	Q4	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	29.0%
2006	Q1	93.7%	93.7%	93.7%	93.7%	93.7%	93.7%	93.7%	33.1%
	Q2	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	46.0%
	Q3	80.8%	80.8%	80.8%	80.8%	80.8%	80.8%	80.8%	25.7%
	Q4	92.0%	92.0%	92.0%	91.9%	92.0%	92.0%	92.0%	22.1%
2007	Q1	94.1%	94.1%	94.1%	93.8%	94.1%	94.1%	94.1%	16.1%
	Q2	91.1%	91.1%	91.1%	91.1%	91.1%	91.1%	91.1%	19.2%
	Q3	91.3%	91.3%	91.3%	91.2%	91.3%	91.3%	91.3%	26.4%
	Q4	97.1%	97.1%	97.1%	96.9%	97.1%	97.1%	97.1%	26.8%
2008	Q1	95.8%	95.8%	95.8%	95.7%	95.8%	95.8%	95.8%	23.8%
	Q2	95.7%	95.7%	95.7%	95.7%	95.7%	95.7%	95.7%	19.4%
	Q3	91.0%	91.0%	87.0%	85.6%	87.0%	88.2%	88.2%	28.7%
	Q4	78.1%	78.1%	76.4%	75.3%	76.4%	77.0%	77.0%	19.1%
2009	Q1	91.6%	91.6%	91.3%	91.3%	91.3%	91.5%	91.5%	13.8%
	Q2	94.3%	94.3%	94.3%	94.3%	94.3%	94.3%	94.3%	22.2%
	Q3	96.7%	96.7%	96.5%	96.5%	96.5%	96.6%	96.6%	35.9%
	Q4	95.6%	95.6%	95.3%	95.2%	95.3%	95.3%	95.3%	19.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Clarion, IA

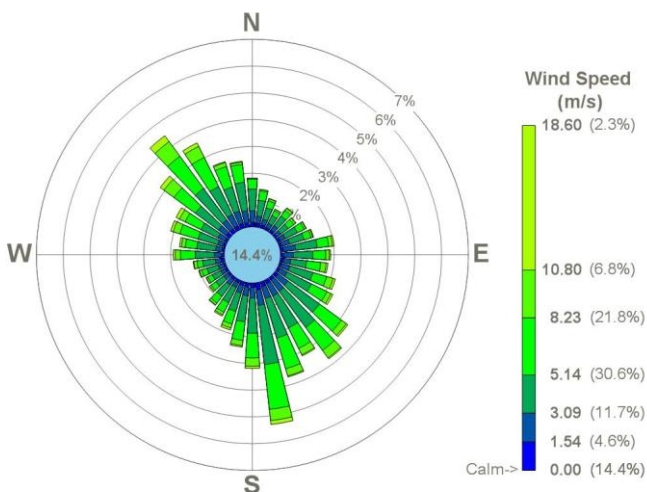
(KCAV)

Station Info

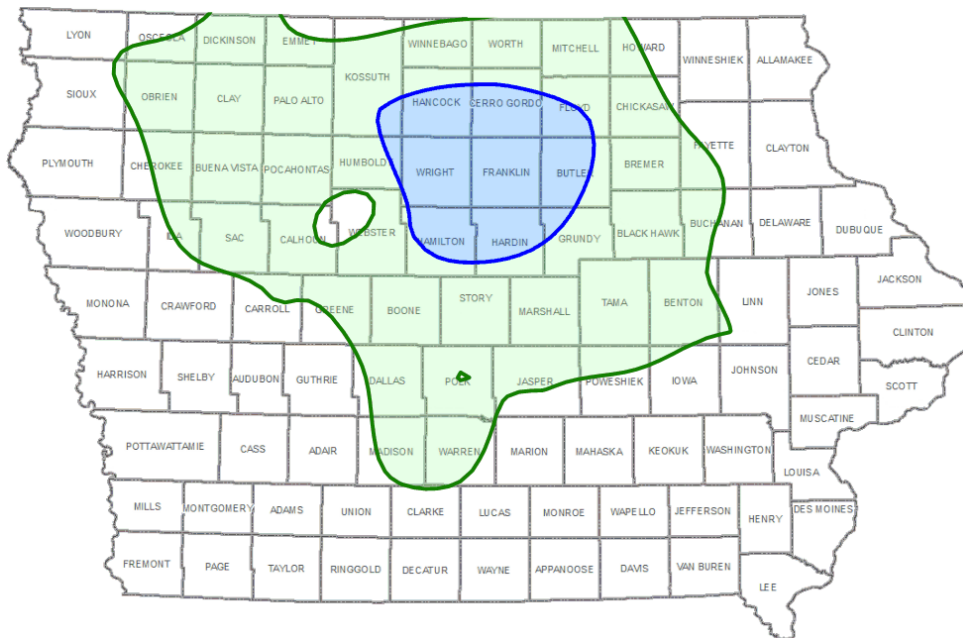
WBAN: NA
WMO: 725458
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.7430 N, 93.7592 W
UTM (NAD83, Z15): 437861.43, 4732555.45
Elevation: 352.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KEBS	0.916
KMCW	0.901
KAXA	0.892
KCCY	0.888
KOLZ	0.862
KMIW	0.861
KDSM	0.861
KALO	0.858
KBNW	0.858
KSPW	0.841
KAMW	0.833
KSLB	0.830
KMJQ	0.822
KSHL	0.815
KTNU	0.809
KIIB	0.809
KVTI	0.804
KEST	0.802
KCIN	0.801
KCID	0.799

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.7%	95.7%	95.1%	95.1%	95.1%	95.1%	95.1%	9.6%
	Q2	89.2%	89.2%	88.7%	88.6%	88.7%	88.7%	88.7%	6.6%
	Q3	88.4%	88.4%	88.4%	87.8%	88.4%	88.4%	88.4%	19.0%
	Q4	90.1%	90.1%	90.1%	90.0%	90.1%	90.1%	90.1%	11.8%
2006	Q1	96.9%	96.9%	96.9%	96.8%	96.9%	96.9%	96.9%	7.1%
	Q2	95.5%	95.5%	95.5%	94.0%	95.4%	95.4%	95.4%	12.5%
	Q3	96.9%	96.9%	96.9%	96.1%	96.9%	96.9%	96.9%	31.9%
	Q4	86.0%	86.0%	85.9%	85.6%	86.0%	86.0%	86.0%	10.1%
2007	Q1	90.7%	90.7%	90.6%	88.7%	90.6%	90.6%	90.6%	7.1%
	Q2	91.3%	91.3%	91.3%	90.2%	91.2%	91.2%	91.2%	12.6%
	Q3	91.1%	91.1%	91.1%	90.5%	91.1%	91.1%	91.1%	23.2%
	Q4	95.7%	95.7%	95.7%	95.4%	95.7%	95.7%	95.7%	14.4%
2008	Q1	95.8%	95.8%	95.8%	94.5%	95.8%	95.8%	95.8%	15.6%
	Q2	90.4%	90.4%	90.4%	90.4%	90.1%	90.1%	90.1%	14.1%
	Q3	83.6%	83.6%	83.6%	83.4%	83.6%	83.6%	83.6%	19.5%
	Q4	92.4%	92.4%	92.4%	92.3%	92.4%	92.4%	92.4%	26.1%
2009	Q1	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	13.5%
	Q2	93.6%	93.6%	93.6%	93.5%	93.5%	93.5%	93.5%	6.6%
	Q3	88.5%	88.5%	88.5%	88.3%	88.5%	88.5%	88.5%	19.1%
	Q4	99.3%	99.3%	99.3%	99.0%	99.3%	99.3%	99.3%	7.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Clinton, IA

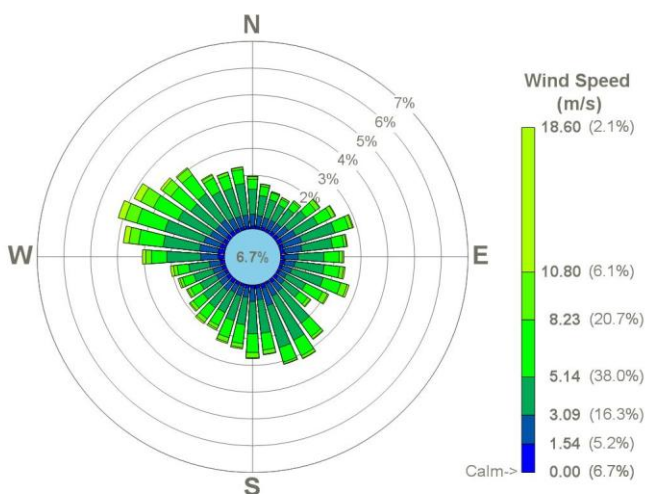
(KCWI)

Station Info

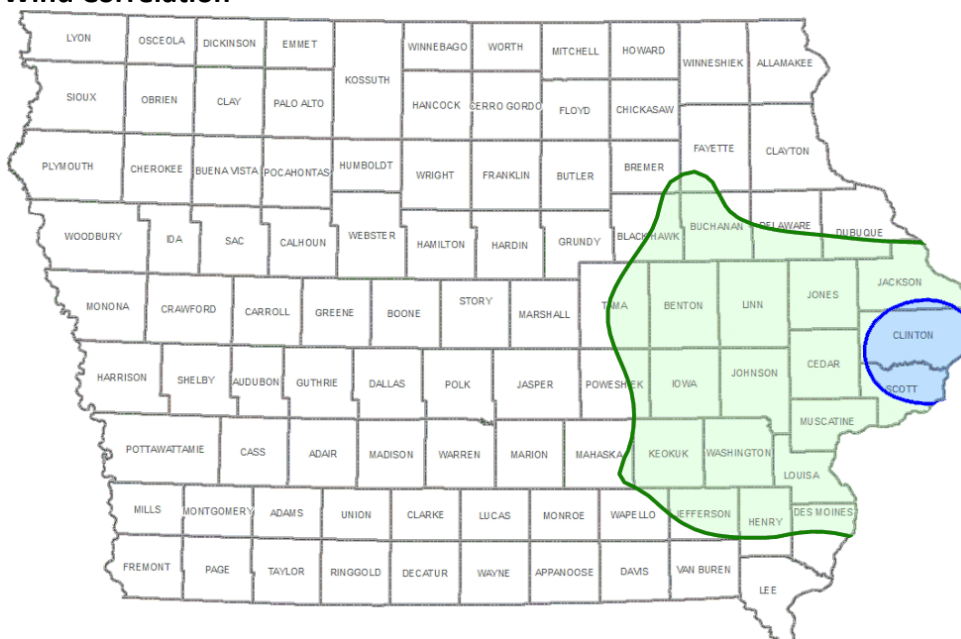
WBAN: 94979
WMO: 725473
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.8295 N, 90.3328 W
UTM (NAD83, Z15): 721488.82, 4634285.57
Elevation: 211.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KDVN	0.910
KMLI	0.870
KSFY	0.857
KMUT	0.852
KAWG	0.846
KMXO	0.845
KCID	0.823
KFFL	0.813
KVTI	0.813
KOLZ	0.813
KIOW	0.810
KFEP	0.807
KMPZ	0.807
KOOA	0.806
KIIB	0.804
KMQB	0.802
KGBG	0.800
KDBQ	0.790
KALO	0.789
KOTM	0.788

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.8%	99.8%	97.7%	97.6%	97.5%	96.8%	96.8%	10.0%
	Q2	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	4.6%
	Q3	98.3%	98.3%	98.2%	78.8%	98.3%	98.3%	98.3%	8.2%
	Q4	98.7%	98.7%	98.7%	98.7%	95.5%	98.7%	98.7%	5.7%
2006	Q1	98.2%	98.2%	98.2%	98.2%	98.2%	95.7%	95.7%	5.4%
	Q2	94.7%	94.7%	94.7%	94.7%	92.0%	94.7%	94.7%	3.9%
	Q3	97.6%	97.6%	90.4%	86.5%	90.4%	90.3%	90.3%	8.7%
	Q4	98.0%	98.0%	98.0%	97.2%	98.0%	98.0%	98.0%	4.7%
2007	Q1	95.6%	95.6%	95.6%	95.4%	95.4%	95.6%	95.6%	5.2%
	Q2	97.3%	97.3%	95.6%	95.5%	95.2%	95.6%	95.6%	4.6%
	Q3	95.5%	95.5%	84.5%	81.9%	84.9%	84.5%	84.5%	8.4%
	Q4	99.0%	99.0%	99.0%	99.0%	97.0%	97.0%	97.0%	6.6%
2008	Q1	95.8%	95.8%	95.8%	95.7%	95.8%	95.8%	95.8%	9.3%
	Q2	98.9%	98.9%	98.9%	98.9%	98.9%	98.9%	98.9%	4.3%
	Q3	82.2%	82.2%	82.2%	82.1%	82.2%	82.2%	82.2%	7.8%
	Q4	98.9%	98.9%	98.9%	91.0%	98.9%	98.9%	98.9%	6.7%
2009	Q1	98.8%	98.8%	98.8%	92.7%	98.8%	98.8%	98.8%	6.9%
	Q2	99.2%	99.2%	99.2%	93.3%	98.9%	99.2%	99.2%	6.5%
	Q3	93.9%	93.9%	93.9%	93.8%	83.4%	93.9%	93.9%	11.0%
	Q4	89.1%	89.1%	89.1%	89.1%	89.0%	89.1%	89.1%	4.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Council Bluffs, IA

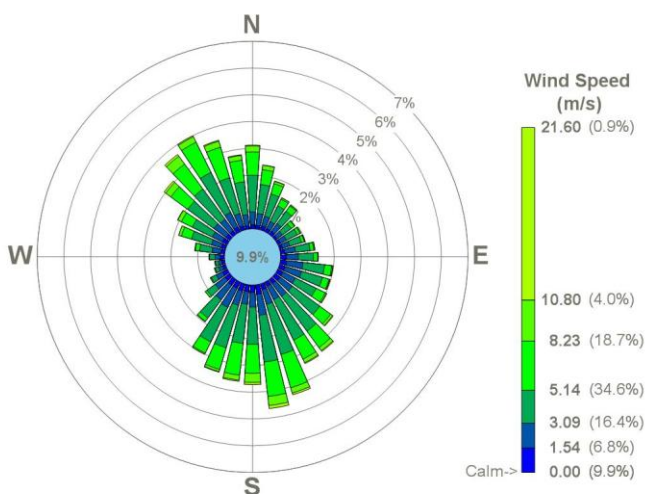
(KCBF)

Station Info

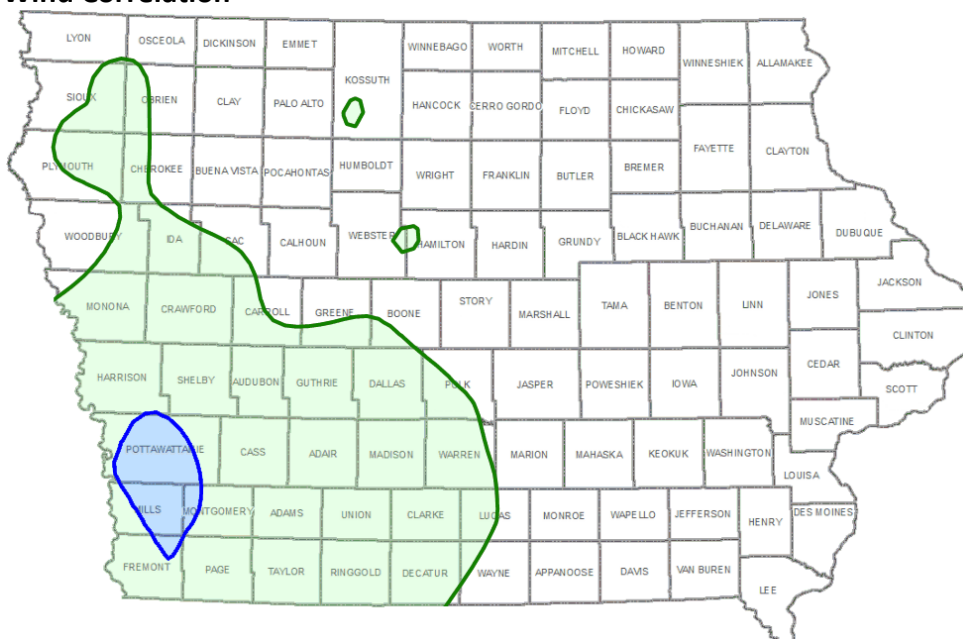
WBAN: NA
WMO: 725497
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.2557 N, 95.7598 W
UTM (NAD83, Z15): 268784.09, 4570816.36
Elevation: 373.7 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KSDA	0.901
KRDK	0.897
KDNS	0.882
KHNR	0.867
KTQE	0.865
KAFK	0.865
KADU	0.860
KCSQ	0.846
KAIO	0.839
KSTJ	0.832
KOFF	0.829
KOMA	0.824
KLRJ	0.824
KDSM	0.819
KICL	0.813
KLWD	0.813
KSHL	0.813
KAXA	0.806
KCNC	0.804
KEBS	0.803

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	89.9%	89.9%	87.3%	87.2%	86.8%	86.8%	86.8%	10.6%
	Q2	93.1%	93.1%	93.1%	93.0%	93.1%	93.1%	93.1%	6.8%
	Q3	89.5%	89.5%	89.5%	89.4%	89.5%	89.5%	89.5%	12.0%
	Q4	86.1%	86.1%	86.1%	85.2%	86.1%	86.1%	86.1%	9.0%
2006	Q1	95.9%	95.9%	95.9%	95.9%	95.9%	95.9%	95.9%	6.6%
	Q2	98.0%	98.0%	98.0%	97.9%	98.0%	98.0%	98.0%	8.9%
	Q3	96.1%	96.1%	95.4%	95.0%	95.4%	95.4%	95.4%	10.8%
	Q4	84.3%	84.3%	84.3%	84.1%	84.3%	84.3%	84.3%	8.1%
2007	Q1	95.4%	95.4%	95.4%	95.3%	95.4%	95.4%	95.4%	7.4%
	Q2	93.6%	93.6%	93.6%	93.5%	93.5%	93.5%	93.5%	8.0%
	Q3	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	9.8%
	Q4	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	11.0%
2008	Q1	95.2%	95.2%	95.2%	95.2%	95.0%	95.0%	95.0%	8.5%
	Q2	90.9%	90.9%	90.9%	90.9%	90.8%	90.8%	90.8%	9.1%
	Q3	83.9%	83.9%	83.9%	83.9%	83.9%	83.9%	83.9%	14.3%
	Q4	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	9.6%
2009	Q1	89.3%	89.3%	89.3%	89.3%	89.3%	89.3%	89.3%	5.6%
	Q2	88.4%	88.4%	88.4%	87.9%	88.4%	88.4%	88.4%	9.9%
	Q3	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	18.8%
	Q4	84.1%	84.1%	84.0%	84.1%	84.0%	84.0%	84.0%	12.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Creston, IA

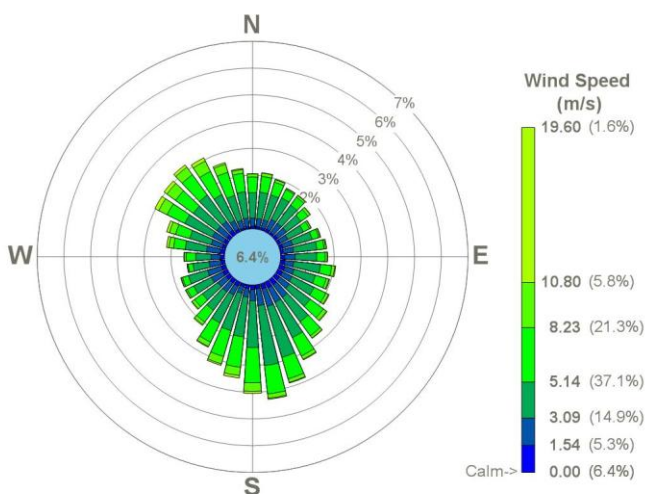
(KCSQ)

Station Info

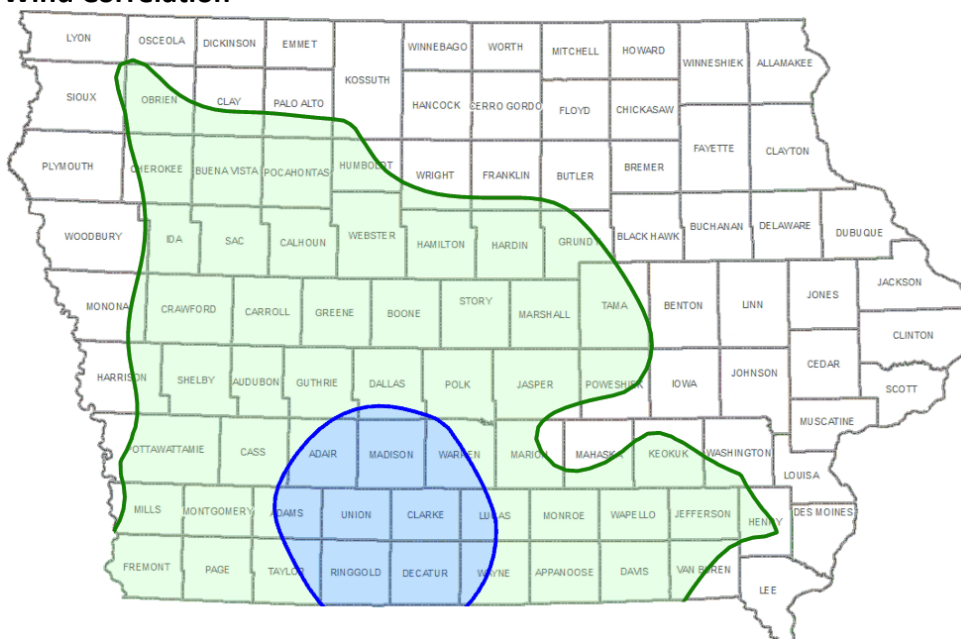
WBAN: NA
WMO: 725474
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.0188 N, 94.3608 W
UTM (NAD83, Z15): 385585.65, 4541735.86
Elevation: 393.8 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KLWD	0.926
KCNC	0.903
KDSM	0.894
KDNS	0.876
KSDA	0.873
KRDK	0.869
KOTM	0.860
KAFK	0.859
KHNR	0.856
KTNU	0.856
KIKV	0.856
KBNW	0.850
KOXV	0.850
KCBF	0.846
KADU	0.846
KSLB	0.844
KCIN	0.836
KMIW	0.834
KEBS	0.834
KAIO	0.830

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	93.8%	93.8%	93.7%	93.8%	93.8%	93.8%	93.8%	9.4%
	Q2	93.6%	93.6%	93.6%	93.6%	93.6%	93.6%	93.6%	3.8%
	Q3	83.7%	83.7%	83.7%	83.6%	83.7%	83.7%	83.7%	8.3%
	Q4	94.4%	94.4%	94.3%	94.3%	94.4%	94.4%	94.4%	5.3%
2006	Q1	98.4%	98.4%	98.4%	98.3%	97.5%	97.5%	97.5%	3.7%
	Q2	90.0%	90.0%	89.9%	90.0%	85.3%	85.3%	85.3%	4.8%
	Q3	94.4%	94.4%	94.3%	88.2%	94.4%	94.4%	94.4%	7.7%
	Q4	85.3%	85.3%	85.3%	85.3%	85.3%	85.3%	85.3%	3.5%
2007	Q1	92.4%	92.4%	92.3%	90.7%	92.3%	92.3%	92.3%	2.6%
	Q2	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	5.3%
	Q3	91.4%	91.4%	91.4%	91.3%	91.4%	91.4%	91.4%	7.4%
	Q4	95.5%	95.5%	95.4%	95.4%	95.5%	95.5%	95.5%	7.9%
2008	Q1	95.8%	95.8%	95.7%	95.4%	95.7%	95.7%	95.7%	5.9%
	Q2	96.6%	96.6%	96.6%	96.5%	96.6%	96.6%	96.6%	5.7%
	Q3	96.1%	96.1%	96.1%	96.1%	96.1%	96.1%	96.1%	11.4%
	Q4	89.4%	89.4%	89.4%	89.4%	89.4%	89.4%	89.4%	7.9%
2009	Q1	93.3%	93.3%	93.1%	93.2%	93.1%	93.1%	93.1%	3.4%
	Q2	81.9%	81.9%	81.9%	81.9%	81.9%	81.9%	81.9%	4.7%
	Q3	98.7%	98.7%	98.7%	98.6%	97.4%	97.4%	97.4%	12.7%
	Q4	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	6.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Davenport, IA

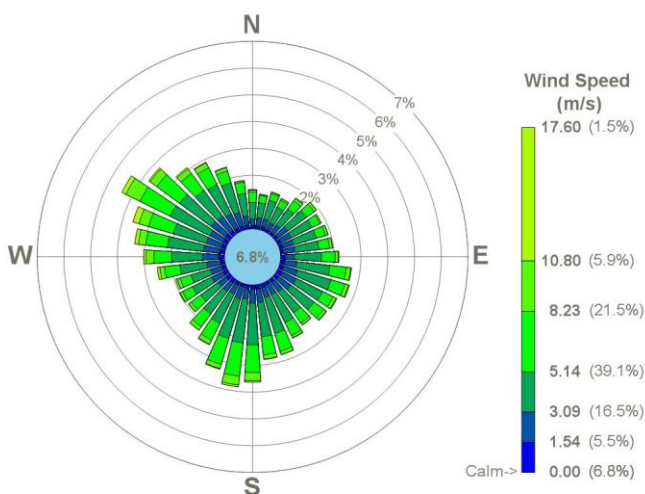
(KDVN)

Station Info

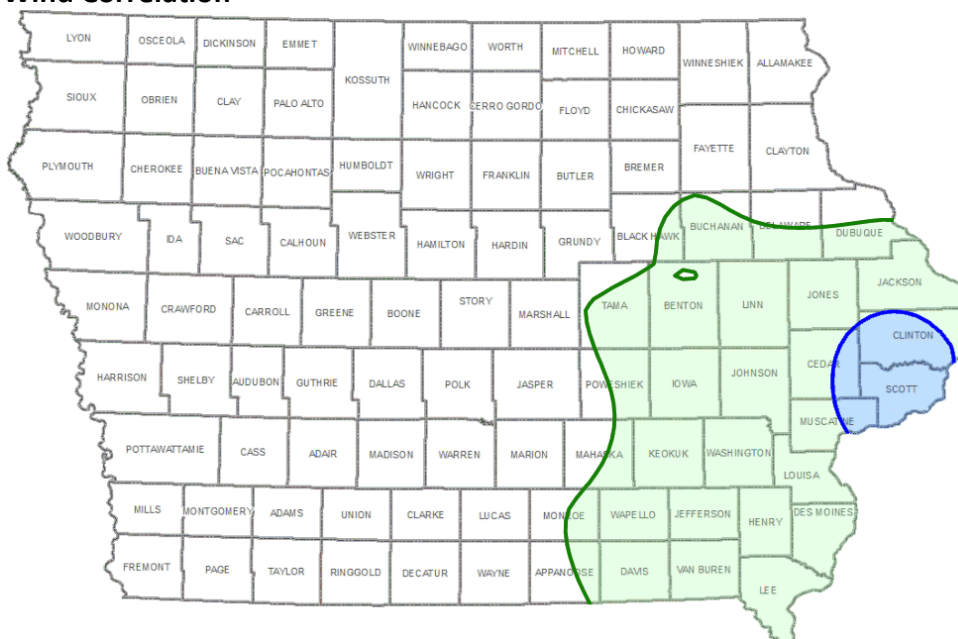
WBAN: 94982
WMO: 725349
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/20/2005

Location Info

Lat-Long: 41.6133 N, 90.5949 W
UTM (NAD83, Z15): 700393.10, 4609636.86
Elevation: 227.7 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KMLI	0.919
KCWI	0.910
KAWG	0.884
KMUT	0.877
KMPZ	0.866
KBRL	0.862
KFFL	0.861
KFEP	0.852
KMQB	0.847
KCID	0.846
KGBG	0.846
KMXO	0.841
KOTM	0.835
KDBQ	0.828
KIOW	0.827
KOOA	0.822
KSFY	0.821
KFSW	0.820
KIIB	0.818
KEOK	0.817

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.2%	97.2%	4.2%	96.9%	96.8%	95.7%	96.9%	5.9%
	Q2	99.8%	99.8%	1.9%	99.5%	99.6%	96.5%	99.6%	3.8%
	Q3	97.6%	97.6%	3.5%	97.3%	96.1%	93.5%	97.4%	15.3%
	Q4	98.6%	98.6%	1.8%	98.4%	98.5%	97.6%	98.4%	6.2%
2006	Q1	97.7%	97.7%	2.4%	97.6%	97.7%	97.3%	97.7%	3.7%
	Q2	99.1%	99.1%	1.5%	99.1%	99.1%	97.2%	98.8%	5.1%
	Q3	99.5%	99.5%	2.2%	99.5%	99.5%	98.4%	99.5%	9.5%
	Q4	98.6%	98.6%	1.5%	97.7%	98.6%	98.4%	98.6%	4.1%
2007	Q1	96.6%	96.6%	1.7%	96.4%	96.5%	95.5%	95.8%	3.4%
	Q2	93.7%	93.7%	2.7%	93.5%	93.7%	92.6%	93.7%	6.3%
	Q3	96.7%	96.7%	3.9%	95.1%	95.7%	92.4%	94.7%	11.1%
	Q4	98.5%	98.5%	2.4%	98.1%	98.3%	97.6%	97.7%	4.5%
2008	Q1	96.9%	96.9%	1.9%	96.8%	96.8%	96.5%	96.8%	5.2%
	Q2	99.1%	99.1%	1.4%	98.7%	98.9%	97.8%	98.6%	4.9%
	Q3	98.1%	98.1%	1.0%	98.0%	98.1%	95.9%	98.1%	12.0%
	Q4	99.3%	99.3%	1.8%	99.1%	99.3%	98.6%	99.0%	4.9%
2009	Q1	98.8%	98.8%	1.9%	98.8%	98.8%	98.2%	98.8%	3.6%
	Q2	99.5%	99.5%	1.2%	99.4%	99.5%	97.9%	99.5%	7.2%
	Q3	99.6%	99.6%	1.8%	99.5%	99.6%	97.5%	99.5%	13.6%
	Q4	99.1%	99.1%	1.4%	99.0%	99.1%	98.8%	99.0%	5.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Decorah, IA

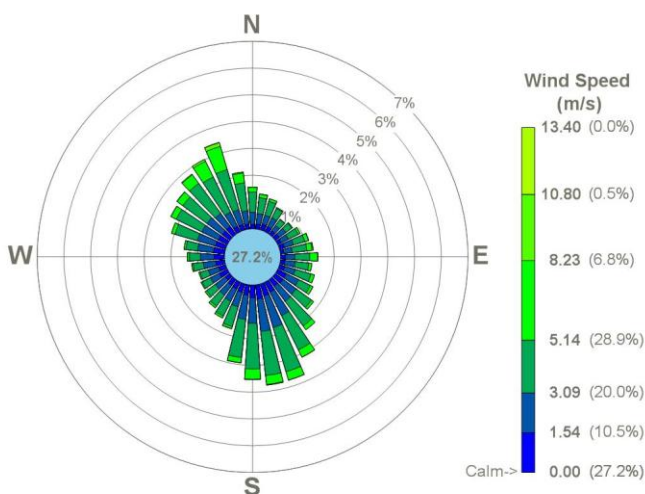
(KDEH)

Station Info

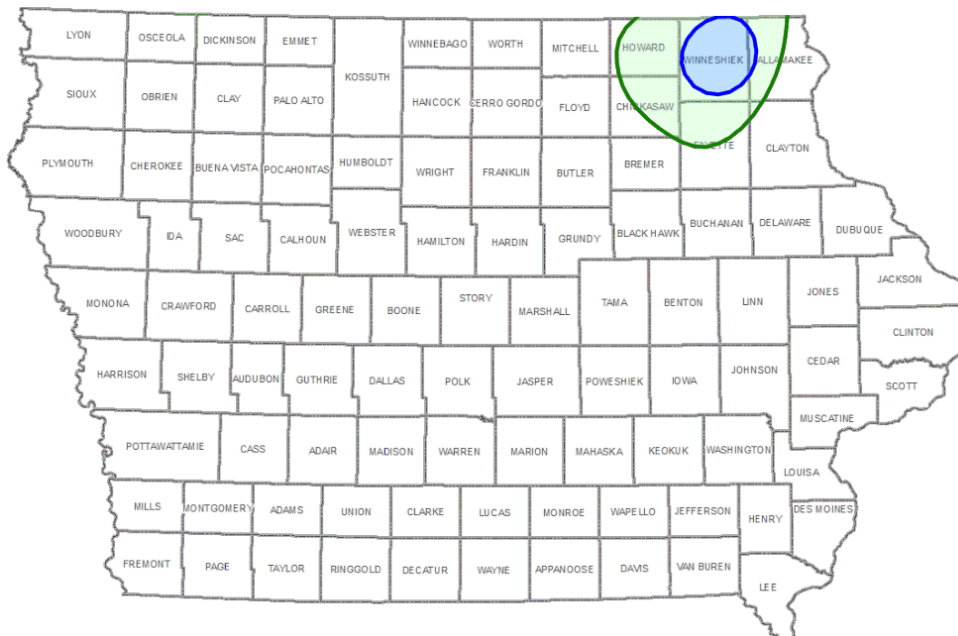
WBAN: NA
WMO: 725476
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.2755 N, 91.7433 W
UTM (NAD83, Z15): 601973.22, 4792176.02
Elevation: 348.7 m
Confidence: Medium



Wind Correlation



Station	Correlation
KLSE	0.802
KAUM	0.791
KVTI	0.782
KFKA	0.769
KCCY	0.767
KOLZ	0.764
KAEL	0.746
KIKV	0.743
KTNU	0.737
KOXV	0.733
KMXO	0.727
KMPZ	0.718
KAWG	0.714
KCID	0.713
KEBS	0.710
KMUT	0.703
KIOW	0.701
KFFL	0.701
KFSW	0.698
KCNC	0.692

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	31.9%
	Q2	89.2%	89.2%	89.2%	89.1%	89.2%	89.2%	89.2%	21.3%
	Q3	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	43.4%
	Q4	70.9%	70.9%	70.9%	70.8%	70.8%	70.8%	70.8%	21.7%
2006	Q1	98.6%	98.6%	98.6%	98.4%	98.6%	98.6%	98.6%	23.8%
	Q2	93.7%	93.7%	93.7%	93.6%	93.7%	93.7%	93.7%	27.2%
	Q3	97.6%	97.6%	97.6%	97.6%	97.6%	97.6%	97.6%	40.2%
	Q4	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	32.0%
2007	Q1	95.1%	95.1%	94.9%	95.1%	95.1%	95.1%	95.1%	28.5%
	Q2	95.3%	95.3%	95.3%	95.1%	95.3%	95.3%	95.3%	21.0%
	Q3	87.6%	87.6%	87.6%	86.9%	87.6%	87.6%	87.6%	35.4%
	Q4	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	17.9%
2008	Q1	95.9%	95.9%	95.9%	95.7%	95.9%	95.9%	95.9%	19.4%
	Q2	95.2%	95.2%	95.2%	95.1%	95.2%	95.2%	95.2%	20.0%
	Q3	93.0%	93.0%	93.0%	92.9%	93.0%	93.0%	93.0%	34.8%
	Q4	95.7%	95.7%	95.6%	95.5%	95.7%	95.7%	95.7%	20.3%
2009	Q1	95.5%	95.5%	95.5%	95.1%	95.5%	95.5%	95.5%	14.9%
	Q2	96.4%	96.4%	96.4%	96.2%	96.4%	96.4%	96.4%	22.7%
	Q3	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	46.5%
	Q4	98.8%	98.8%	98.8%	98.6%	98.8%	98.8%	98.8%	20.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Denison, IA

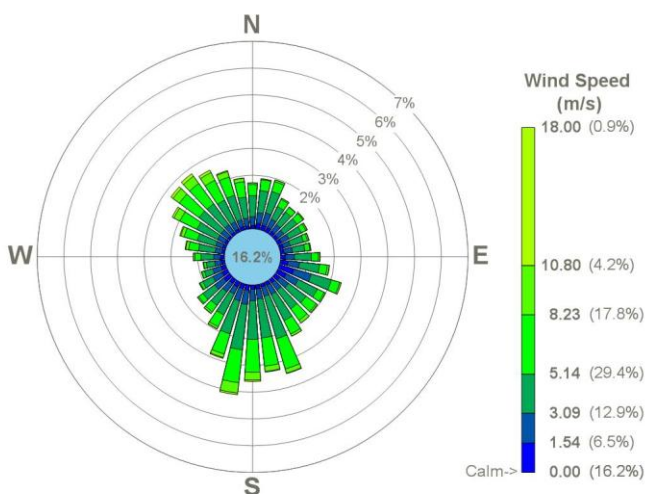
(KDNS)

Station Info

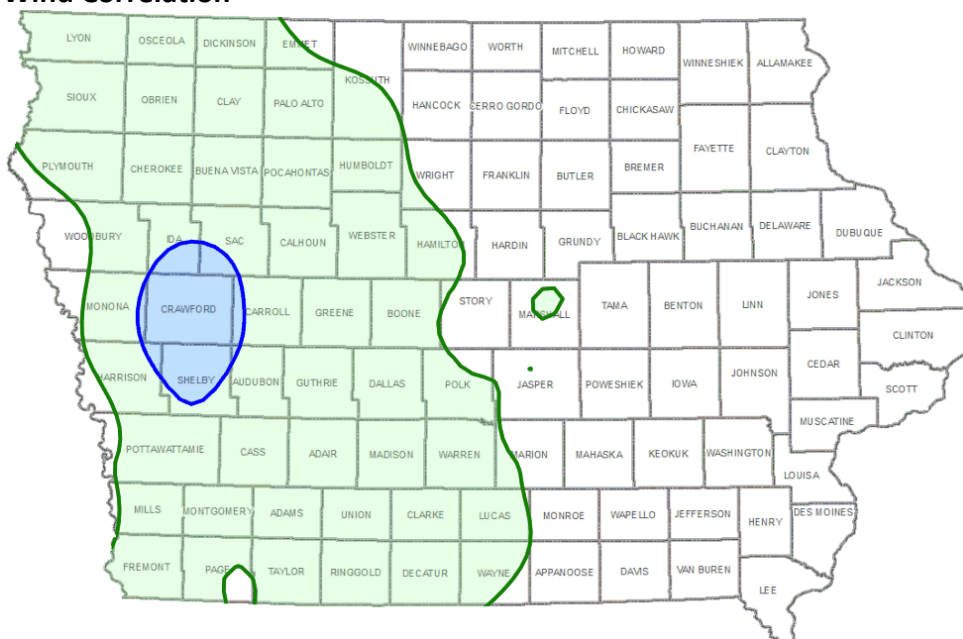
WBAN: NA
WMO: 725477
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.9842 N, 95.3800 W
UTM (NAD83, Z15): 302839.25, 4650762.00
Elevation: 380.7 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KHNR	0.903
KCBF	0.882
KLRJ	0.879
KCSQ	0.876
KSHL	0.871
KAIO	0.868
KSLB	0.866
KRDK	0.863
KADU	0.862
KORC	0.849
KCIN	0.844
KFOD	0.836
KSDA	0.834
KDSM	0.833
KAXA	0.832
KAFK	0.826
KBNW	0.824
KCNC	0.823
KLWD	0.820
KSPW	0.817

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	16.9%
	Q2	87.7%	87.7%	82.6%	82.5%	82.6%	82.6%	82.6%	11.9%
	Q3	89.7%	89.7%	89.4%	89.4%	89.4%	89.4%	89.4%	20.4%
	Q4	86.8%	86.8%	86.8%	86.6%	86.8%	86.8%	86.8%	14.7%
2006	Q1	90.5%	90.5%	89.7%	89.7%	89.8%	89.8%	89.8%	11.1%
	Q2	92.3%	92.3%	92.3%	92.2%	92.3%	92.3%	92.3%	15.9%
	Q3	81.4%	81.4%	81.4%	78.8%	81.4%	81.4%	81.4%	17.9%
	Q4	90.4%	90.4%	90.4%	90.3%	90.4%	90.4%	90.4%	17.5%
2007	Q1	84.8%	84.8%	84.8%	84.8%	84.8%	84.8%	84.8%	9.5%
	Q2	79.6%	79.6%	79.6%	79.5%	79.6%	79.6%	79.6%	9.9%
	Q3	86.8%	86.8%	86.8%	86.3%	86.8%	86.8%	86.8%	17.1%
	Q4	88.2%	88.2%	88.2%	88.2%	88.2%	88.2%	88.2%	16.5%
2008	Q1	89.1%	89.1%	89.0%	88.8%	89.0%	89.1%	89.1%	17.0%
	Q2	76.1%	76.1%	76.1%	76.1%	75.5%	75.5%	75.5%	11.0%
	Q3	90.8%	90.8%	90.8%	90.7%	90.8%	90.8%	90.8%	23.4%
	Q4	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	16.7%
2009	Q1	79.2%	79.2%	79.2%	79.1%	79.2%	79.2%	79.2%	11.2%
	Q2	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	16.6%
	Q3	93.2%	93.2%	93.1%	93.1%	93.1%	93.2%	93.2%	31.3%
	Q4	98.7%	98.7%	98.7%	98.6%	98.7%	98.7%	98.7%	17.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Des Moines, IA

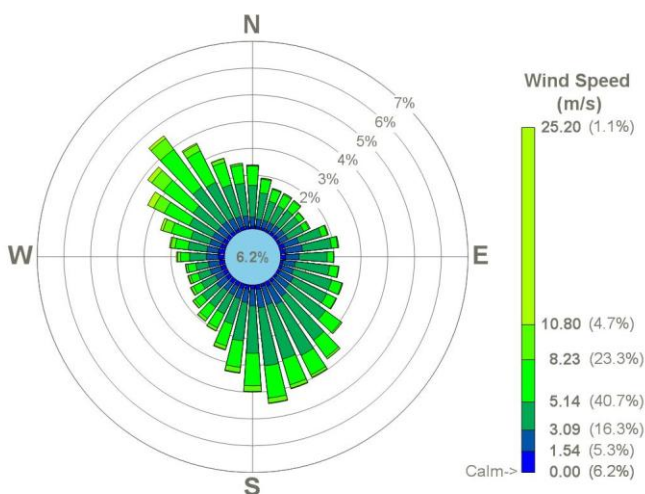
(KDSM)

Station Info

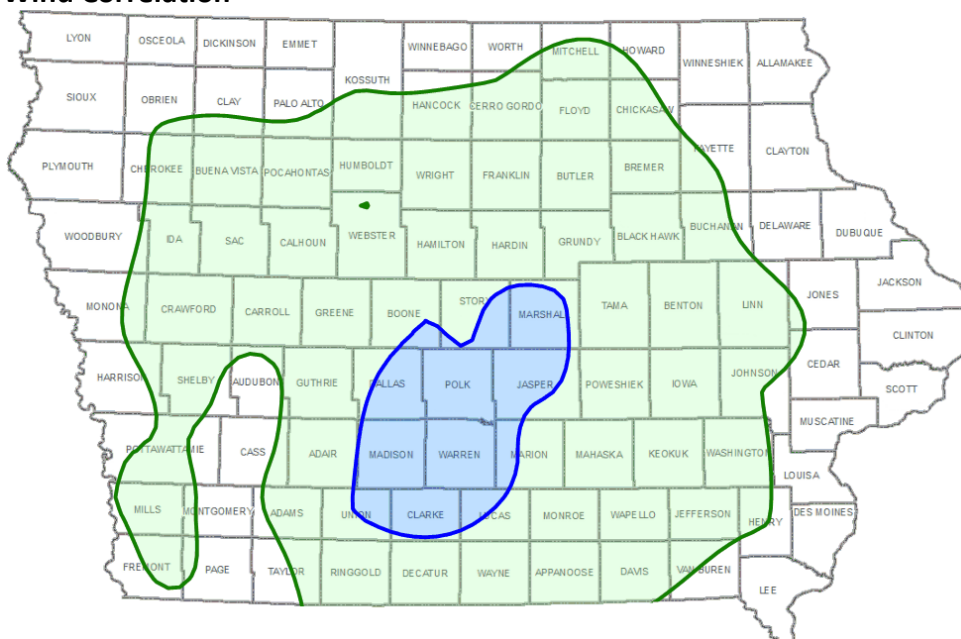
WBAN: 14933
WMO: 725460
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 4/18/2007

Location Info

Lat-Long: 41.5340 N, 93.6531 W
UTM (NAD83, Z15): 445518.84, 4598244.78
Elevation: 285.6 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KTNU	0.912
KMIW	0.902
KIKV	0.900
KBNW	0.899
KAMW	0.897
KCNC	0.896
KCSQ	0.894
KOXX	0.889
KOOA	0.877
KOTM	0.874
KEBS	0.873
KCAV	0.861
KLWD	0.860
KCCY	0.857
KOLZ	0.845
KCID	0.844
KPEA	0.840
KALO	0.838
KDNS	0.833
KVTI	0.833

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	88.6%	97.6%	100.0%	98.9%	100.0%	4.9%
	Q2	100.0%	100.0%	70.3%	98.4%	100.0%	98.3%	100.0%	4.0%
	Q3	100.0%	100.0%	82.2%	98.4%	100.0%	96.9%	100.0%	7.4%
	Q4	100.0%	100.0%	69.7%	96.8%	100.0%	99.4%	100.0%	5.2%
2006	Q1	98.4%	98.4%	65.4%	98.3%	98.4%	97.4%	98.4%	3.2%
	Q2	98.9%	98.9%	16.5%	98.9%	98.9%	96.0%	98.9%	3.9%
	Q3	99.6%	99.6%	16.6%	99.6%	99.6%	97.3%	99.6%	5.6%
	Q4	98.9%	98.9%	17.2%	98.8%	98.8%	98.0%	98.8%	4.5%
2007	Q1	97.9%	97.9%	15.8%	97.7%	97.9%	97.2%	97.9%	2.0%
	Q2	98.8%	98.8%	17.4%	98.8%	98.8%	97.4%	98.8%	5.8%
	Q3	97.3%	97.3%	16.4%	97.3%	97.3%	95.5%	97.3%	8.1%
	Q4	98.7%	98.7%	16.9%	98.6%	98.7%	98.1%	98.7%	5.1%
2008	Q1	96.6%	96.6%	16.4%	96.4%	96.5%	95.7%	96.4%	6.2%
	Q2	99.0%	99.0%	17.3%	99.0%	99.0%	97.3%	99.0%	7.5%
	Q3	97.9%	97.9%	16.5%	97.9%	97.9%	96.1%	97.9%	11.9%
	Q4	99.9%	99.9%	16.8%	99.9%	99.9%	99.5%	99.9%	7.8%
2009	Q1	99.0%	99.0%	16.7%	98.8%	99.0%	98.2%	99.0%	5.0%
	Q2	99.7%	99.7%	16.6%	99.7%	99.7%	97.9%	99.6%	7.5%
	Q3	99.5%	99.5%	16.3%	99.5%	99.5%	97.3%	99.5%	12.4%
	Q4	99.6%	99.6%	16.8%	99.5%	99.6%	99.5%	99.6%	5.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Dubuque, IA

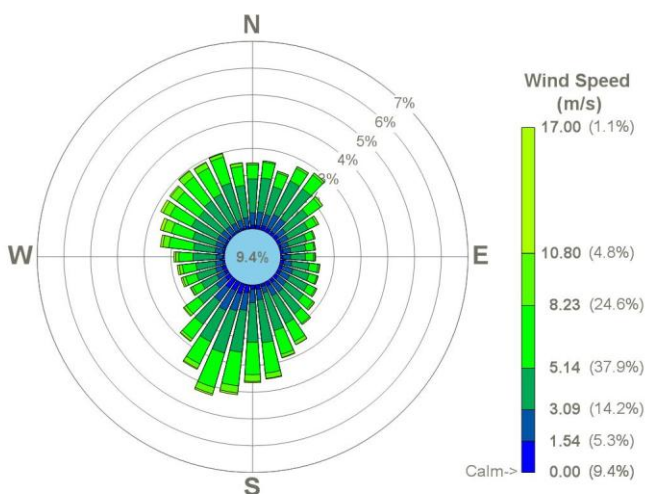
(KDBQ)

Station Info

WBAN: 94908
WMO: 725470
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 4/20/2007

Location Info

Lat-Long: 42.3983 N, 90.7091 W
UTM (NAD83, Z15): 688543.78, 4696542.87
Elevation: 317.0 m
Confidence: High



Wind Correlation



Station	Correlation
KDVN	0.828
KBRL	0.814
KAWG	0.801
KMPZ	0.796
KFKA	0.793
KCWI	0.790
KOTM	0.785
KOLZ	0.780
KFFL	0.777
KRST	0.776
KCID	0.776
KFEP	0.767
KUIN	0.766
KMUT	0.765
KTNU	0.761
KCCY	0.757
KMIW	0.756
KCNC	0.754
KMQB	0.750
KOXY	0.745

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	89.4%	98.5%	99.9%	98.1%	99.1%	7.8%
	Q2	100.0%	100.0%	70.7%	99.4%	100.0%	98.2%	99.9%	7.6%
	Q3	100.0%	100.0%	82.6%	99.0%	100.0%	97.9%	100.0%	15.9%
	Q4	99.8%	99.8%	71.6%	96.8%	99.7%	98.6%	99.1%	10.6%
2006	Q1	98.5%	98.5%	64.7%	98.4%	98.5%	98.1%	98.5%	5.4%
	Q2	98.9%	98.9%	17.0%	98.1%	98.1%	96.3%	98.1%	7.0%
	Q3	99.4%	99.4%	16.4%	99.1%	99.4%	97.8%	99.4%	11.0%
	Q4	98.7%	98.7%	16.5%	98.7%	98.7%	98.1%	98.7%	4.9%
2007	Q1	97.1%	97.1%	16.1%	96.9%	97.0%	96.8%	97.1%	4.6%
	Q2	97.5%	97.5%	16.9%	97.4%	97.4%	96.1%	97.5%	7.8%
	Q3	96.9%	96.9%	16.8%	96.9%	96.9%	95.3%	96.6%	14.9%
	Q4	97.9%	97.9%	17.4%	97.5%	97.5%	97.2%	97.5%	6.8%
2008	Q1	95.6%	95.6%	16.5%	95.5%	95.6%	95.1%	95.4%	8.2%
	Q2	99.0%	98.9%	17.2%	99.0%	99.0%	97.8%	99.0%	7.7%
	Q3	98.3%	98.3%	16.7%	98.2%	98.3%	96.3%	98.0%	14.9%
	Q4	99.5%	99.5%	17.4%	99.3%	99.5%	98.7%	99.5%	7.6%
2009	Q1	99.0%	99.0%	17.5%	98.5%	98.9%	98.6%	99.0%	4.9%
	Q2	99.6%	99.6%	17.4%	99.6%	99.5%	98.4%	99.6%	10.5%
	Q3	99.5%	99.5%	17.2%	99.3%	99.5%	96.6%	98.8%	22.6%
	Q4	99.4%	99.4%	17.7%	99.4%	99.4%	98.7%	98.8%	7.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Estherville, IA

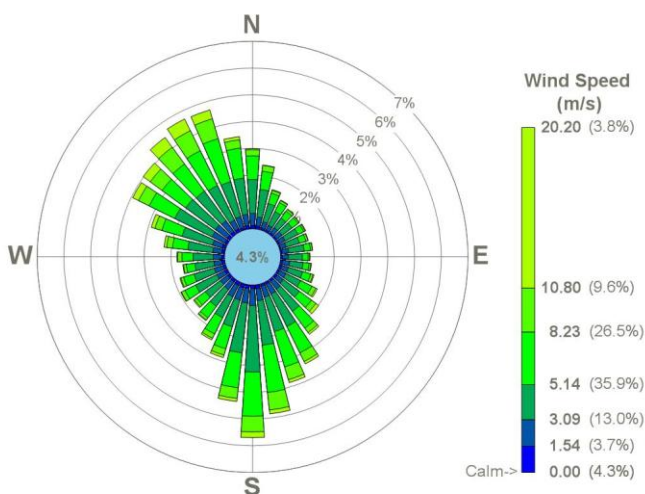
(KEST)

Station Info

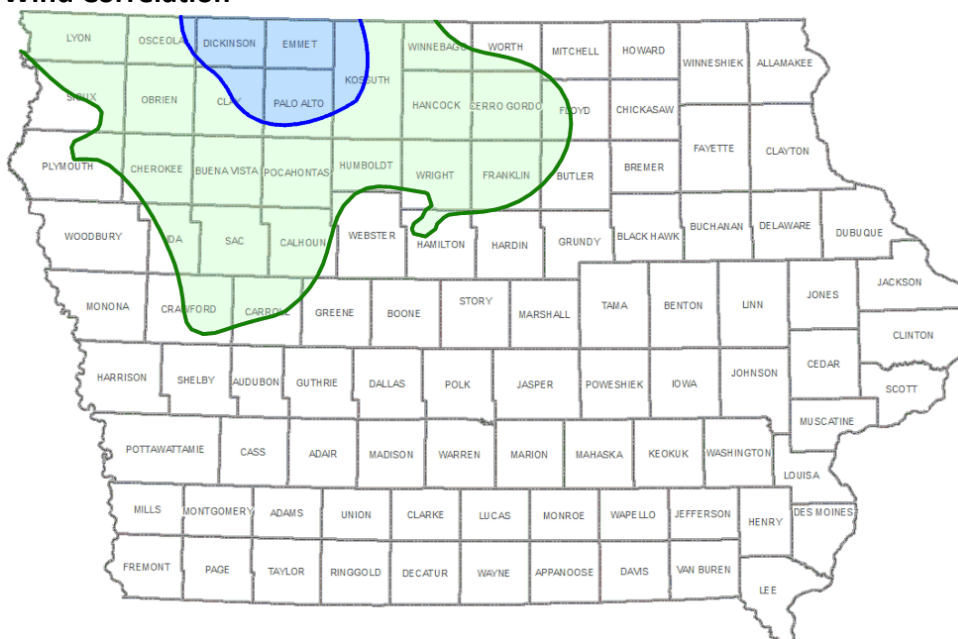
WBAN: 94971
WMO: 726499
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 5/2/2007

Location Info

Lat-Long: 43.4009 N, 94.7476 W
UTM (NAD83, Z15): 358484.33, 4806818.77
Elevation: 400.8 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KMJQ	0.906
KFRM	0.905
KAXA	0.898
KSPW	0.897
KOTG	0.895
KSHL	0.873
KSLB	0.854
KMCW	0.846
KLYV	0.837
KRST	0.834
KFSD	0.816
KLRJ	0.807
KEBS	0.803
KCIN	0.803
KDNS	0.803
KCAV	0.802
KHNR	0.793
KORC	0.789
KCCY	0.781
KBNW	0.781

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.3%	99.3%	11.1%	97.8%	90.7%	97.6%	97.9%	2.5%
	Q2	99.2%	99.2%	2.9%	98.1%	98.2%	97.0%	98.2%	2.2%
	Q3	99.0%	99.0%	1.7%	97.0%	97.2%	94.7%	97.2%	5.1%
	Q4	98.7%	98.7%	3.1%	97.6%	97.7%	96.4%	97.1%	3.4%
2006	Q1	97.6%	97.6%	2.9%	96.7%	96.6%	96.3%	96.6%	2.3%
	Q2	99.1%	99.1%	1.8%	96.0%	96.1%	94.6%	95.9%	2.9%
	Q3	99.6%	99.6%	1.7%	99.3%	99.4%	97.4%	99.3%	5.3%
	Q4	98.6%	98.6%	1.3%	98.4%	98.6%	98.0%	98.5%	2.6%
2007	Q1	96.9%	96.9%	4.3%	90.6%	91.3%	90.0%	90.3%	1.6%
	Q2	97.3%	97.3%	2.1%	97.1%	97.3%	95.7%	97.0%	2.0%
	Q3	96.9%	96.9%	1.8%	96.6%	96.7%	95.2%	96.6%	7.9%
	Q4	98.4%	98.4%	1.9%	95.5%	98.4%	98.0%	98.3%	3.1%
2008	Q1	96.5%	96.5%	2.8%	96.4%	96.5%	96.3%	96.4%	4.0%
	Q2	98.3%	98.3%	1.0%	96.5%	98.2%	96.9%	98.1%	3.9%
	Q3	98.1%	98.1%	0.9%	98.0%	98.1%	96.9%	97.9%	8.4%
	Q4	99.7%	99.7%	1.4%	99.6%	99.4%	99.3%	99.5%	3.7%
2009	Q1	99.0%	99.0%	1.8%	98.9%	99.0%	98.7%	98.9%	2.5%
	Q2	99.6%	99.6%	1.2%	99.3%	99.5%	97.9%	99.1%	4.1%
	Q3	99.4%	99.4%	0.8%	99.2%	99.4%	97.7%	99.3%	13.0%
	Q4	99.5%	99.5%	2.0%	99.2%	99.3%	99.0%	99.4%	4.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Fairfield, IA

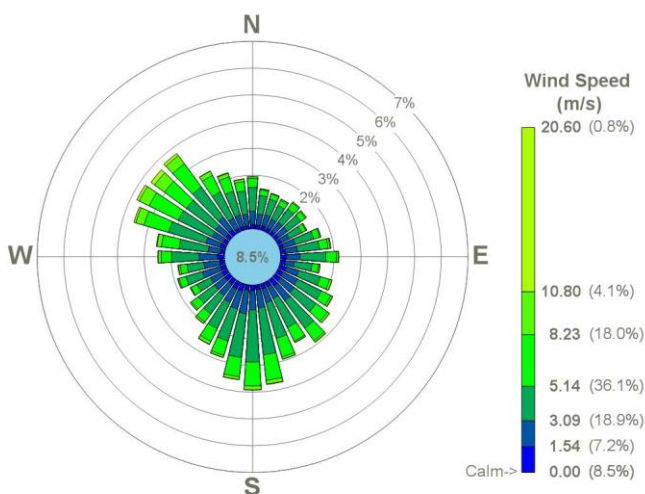
(KFFL)

Station Info

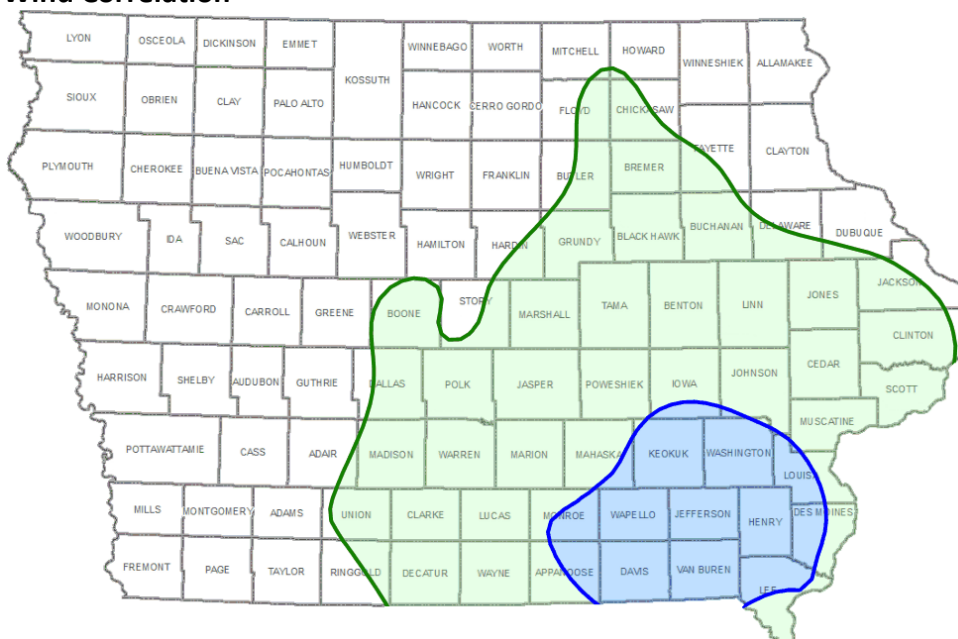
WBAN: NA
WMO: 726498
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.0521 N, 91.9834 W
UTM (NAD83, Z15): 585430.88, 4545038.46
Elevation: 239.6 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KAWG	0.953
KMPZ	0.941
KOTM	0.934
KOOA	0.907
KFSW	0.904
KCNC	0.891
KOXV	0.890
KMQB	0.889
KBRL	0.886
KTNU	0.885
KMUT	0.878
KIOW	0.863
KUIN	0.863
KDVN	0.861
KCID	0.860
KIRK	0.856
KEOK	0.850
KVTI	0.845
KPEA	0.840
KGBG	0.840

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.9%	97.9%	97.9%	97.9%	97.9%	97.9%	97.9%	14.4%
	Q2	84.8%	84.8%	84.8%	84.8%	84.8%	84.8%	84.8%	6.1%
	Q3	96.6%	96.6%	96.2%	96.2%	96.1%	96.1%	96.1%	13.5%
	Q4	87.7%	87.7%	87.7%	86.7%	87.7%	87.7%	87.7%	5.8%
2006	Q1	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	3.7%
	Q2	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	6.4%
	Q3	96.9%	96.9%	96.8%	96.4%	96.9%	96.9%	96.9%	12.2%
	Q4	93.3%	93.3%	93.0%	93.2%	93.3%	93.3%	93.3%	6.0%
2007	Q1	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	4.3%
	Q2	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	8.7%
	Q3	87.8%	87.8%	87.8%	87.7%	87.8%	87.8%	87.8%	10.1%
	Q4	94.3%	94.3%	94.2%	94.3%	94.3%	94.3%	94.3%	7.5%
2008	Q1	90.8%	90.8%	90.6%	90.3%	90.7%	90.7%	90.7%	5.0%
	Q2	89.8%	89.8%	89.6%	89.7%	89.8%	89.8%	89.8%	6.0%
	Q3	94.2%	94.2%	94.2%	94.0%	94.2%	94.2%	94.2%	16.9%
	Q4	98.1%	98.1%	97.8%	98.1%	98.1%	98.1%	98.1%	7.5%
2009	Q1	97.3%	97.3%	97.2%	97.2%	97.3%	97.3%	97.3%	5.4%
	Q2	98.0%	98.0%	97.6%	97.8%	97.9%	97.9%	97.9%	8.9%
	Q3	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	14.1%
	Q4	96.1%	96.1%	95.7%	96.1%	96.1%	96.1%	96.1%	7.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Fairmont, MN

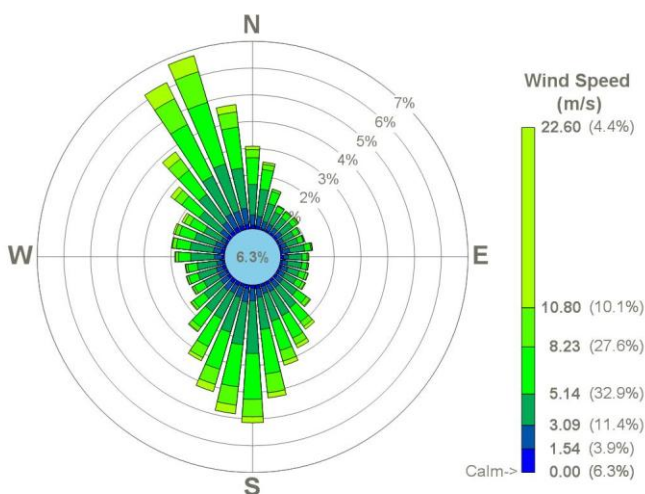
(KFRM)

Station Info

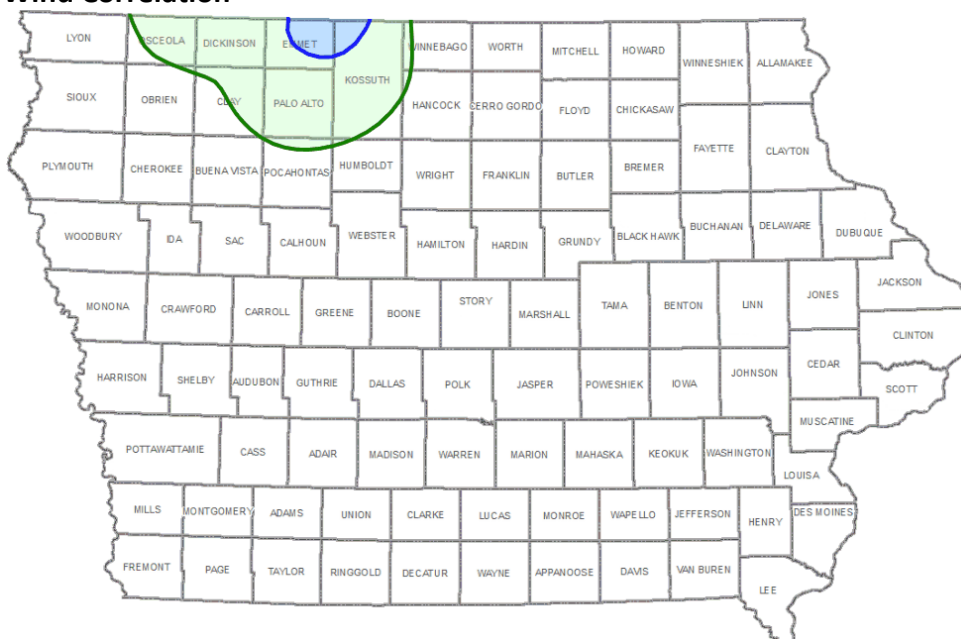
WBAN: 94948
WMO: 726586
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6455 N, 94.4168 W
UTM (NAD83, Z15): 385734.61, 4833475.72
Elevation: 352.3 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KEST	0.905
KOTG	0.860
KAXA	0.847
KMJQ	0.810
KSPW	0.801
KSHL	0.782
KRST	0.773
KSLB	0.754
KMCW	0.745
KCIN	0.740
KLYV	0.740
KADU	0.726
KFOD	0.725
KEBS	0.721
KLRJ	0.719
KFSD	0.711
KDNS	0.710
KCAV	0.700
KAMW	0.696
KAFK	0.694

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	98.9%	98.9%	98.9%	98.9%	98.9%	98.9%	98.9%	7.9%
	Q2	99.5%	99.5%	99.5%	79.7%	99.5%	99.5%	99.5%	4.2%
	Q3	99.3%	99.3%	99.3%	99.2%	99.3%	99.3%	99.3%	8.5%
	Q4	99.6%	99.6%	99.6%	97.7%	99.6%	99.6%	99.6%	5.8%
2006	Q1	99.4%	99.4%	99.2%	96.6%	99.2%	99.2%	99.2%	4.1%
	Q2	99.0%	99.0%	99.0%	98.9%	99.0%	99.0%	99.0%	5.9%
	Q3	95.9%	95.9%	95.9%	95.7%	95.9%	95.9%	95.9%	10.3%
	Q4	76.5%	76.5%	76.4%	29.6%	76.4%	76.4%	76.4%	3.7%
2007	Q1	97.9%	97.9%	97.9%	97.9%	97.5%	94.6%	94.6%	6.2%
	Q2	97.9%	97.9%	97.9%	97.9%	97.6%	97.9%	97.9%	4.1%
	Q3	96.7%	96.7%	96.7%	96.7%	96.7%	96.7%	96.7%	8.7%
	Q4	90.1%	90.1%	89.9%	89.8%	89.5%	89.9%	89.9%	4.5%
2008	Q1	97.1%	97.1%	95.3%	93.5%	95.3%	96.3%	96.3%	6.0%
	Q2	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	5.4%
	Q3	95.0%	95.0%	95.0%	92.9%	95.0%	95.0%	95.0%	10.0%
	Q4	100.0%	100.0%	100.0%	100.0%	99.9%	100.0%	100.0%	5.8%
2009	Q1	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	3.3%
	Q2	99.5%	99.5%	99.5%	99.5%	99.5%	99.3%	99.3%	5.5%
	Q3	98.4%	98.4%	98.4%	98.4%	98.4%	97.7%	97.7%	11.3%
	Q4	99.5%	99.5%	99.5%	99.5%	99.2%	99.3%	99.3%	4.9%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Fort Dodge, IA

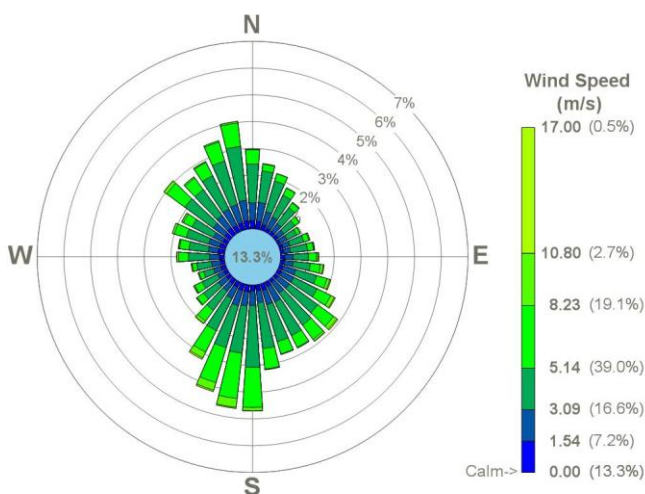
(KFOD)

Station Info

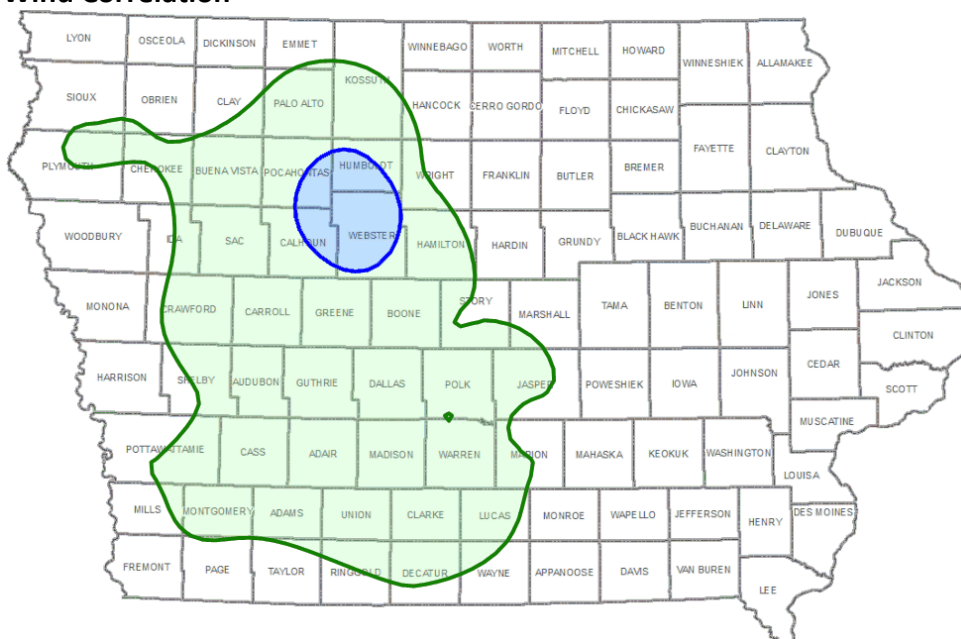
WBAN: 94933
WMO: 725490
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.5496 N, 94.2033 W
UTM (NAD83, Z15): 401207.04, 4711502.19
Elevation: 331.6 m
Confidence: High



Wind Correlation



Station	Correlation
KEBS	0.859
KAXA	0.855
KADU	0.854
KBNW	0.840
KDNS	0.836
KIKV	0.834
KAIO	0.827
KLRJ	0.827
KRDK	0.826
KSLB	0.818
KTNU	0.817
KCSQ	0.814
KCNC	0.813
KCIN	0.813
KOXX	0.811
KLWD	0.798
KDSM	0.797
KAMW	0.796
KFKA	0.795
KCBF	0.794

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.9%	99.9%	99.4%	99.2%	99.4%	99.4%	99.4%	12.3%
	Q2	99.2%	99.2%	99.1%	94.9%	97.9%	99.1%	99.1%	10.3%
	Q3	99.0%	99.0%	98.9%	98.9%	98.6%	98.9%	98.9%	18.3%
	Q4	99.2%	99.2%	98.6%	98.4%	98.6%	98.6%	98.6%	14.3%
2006	Q1	98.5%	98.5%	97.6%	97.1%	97.6%	97.5%	97.5%	7.9%
	Q2	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	11.7%
	Q3	99.1%	99.1%	99.1%	99.1%	99.1%	99.1%	99.1%	17.2%
	Q4	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	12.0%
2007	Q1	97.7%	97.7%	97.7%	97.7%	97.7%	97.1%	97.1%	8.1%
	Q2	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	9.3%
	Q3	98.1%	98.1%	98.1%	97.9%	98.1%	98.1%	98.1%	16.1%
	Q4	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	11.7%
2008	Q1	96.5%	96.5%	96.5%	96.4%	96.5%	96.5%	96.5%	13.6%
	Q2	99.3%	99.3%	99.2%	98.4%	99.2%	99.3%	99.3%	11.3%
	Q3	98.2%	98.2%	98.2%	98.2%	98.2%	98.2%	98.2%	18.9%
	Q4	99.7%	99.7%	99.5%	99.0%	99.5%	99.7%	99.7%	13.3%
2009	Q1	97.6%	97.6%	97.5%	93.3%	97.5%	97.5%	97.5%	11.4%
	Q2	99.6%	99.6%	99.3%	99.1%	99.3%	99.5%	99.5%	13.0%
	Q3	97.2%	97.2%	97.2%	97.1%	97.2%	97.2%	97.2%	25.1%
	Q4	99.6%	99.6%	99.6%	99.6%	99.6%	99.5%	99.5%	10.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Fort Madison, IA

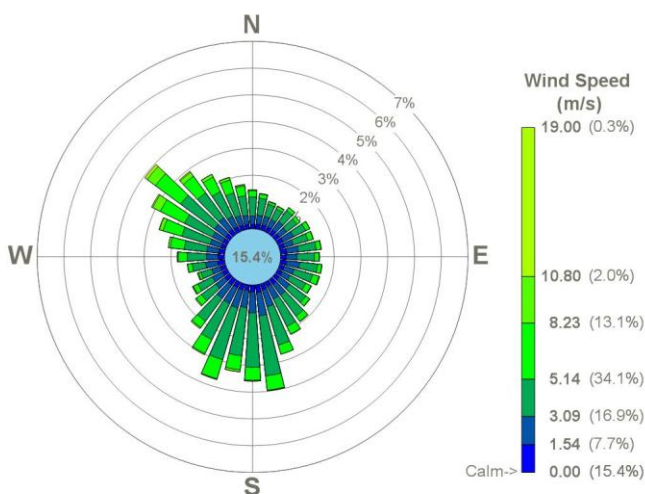
(KFSW)

Station Info

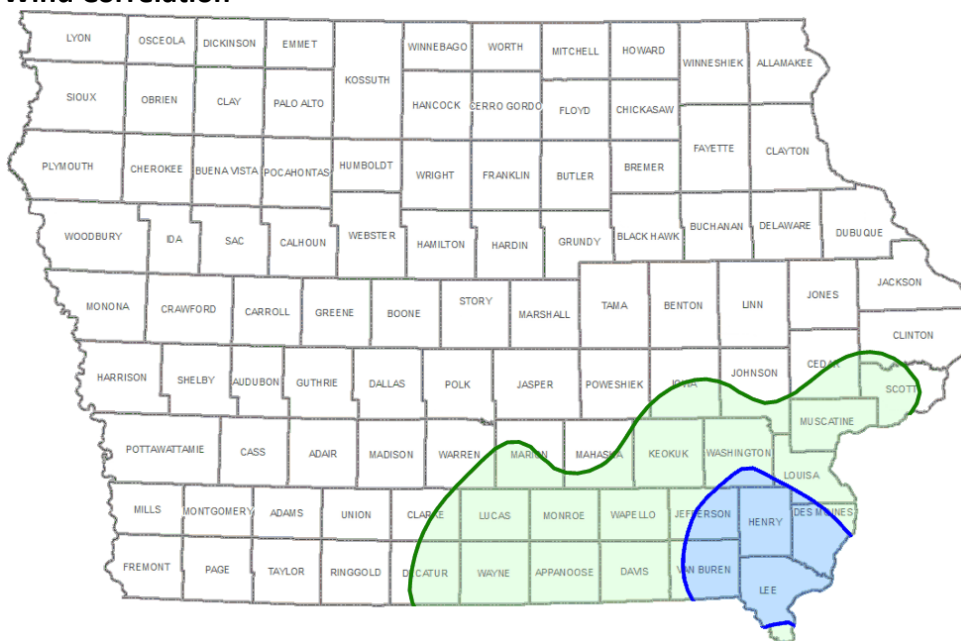
WBAN: NA
WMO: 725483
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.6615 N, 91.3267 W
UTM (NAD83, Z15): 641447.66, 4502527.50
Elevation: 220.4 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KMPZ	0.936
KBRL	0.918
KMQB	0.905
KFFL	0.904
KAWG	0.901
KEOK	0.887
KUIN	0.887
KGBG	0.855
KIRK	0.852
KOTM	0.845
KMUT	0.842
KCNC	0.836
KOXV	0.830
KDVN	0.820
KOOA	0.817
KLWD	0.800
KTNU	0.790
KCID	0.788
KIOW	0.781
KIKV	0.779

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	12.1%
	Q2	89.3%	89.3%	89.3%	89.3%	89.3%	89.3%	89.3%	8.4%
	Q3	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	18.4%
	Q4	86.2%	86.2%	86.2%	86.2%	86.2%	86.2%	86.2%	14.3%
2006	Q1	86.2%	86.2%	86.2%	86.2%	86.0%	86.2%	86.2%	7.9%
	Q2	95.7%	95.7%	95.7%	95.7%	95.7%	95.7%	95.7%	15.3%
	Q3	86.1%	86.1%	86.1%	86.1%	86.1%	86.1%	86.1%	21.8%
	Q4	91.7%	91.7%	91.7%	91.7%	89.4%	91.7%	91.7%	15.2%
2007	Q1	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	9.8%
	Q2	87.9%	87.9%	87.9%	87.9%	87.9%	87.9%	87.9%	24.7%
	Q3	91.5%	91.5%	91.4%	91.4%	91.4%	91.4%	91.4%	50.9%
	Q4	90.5%	90.5%	90.5%	90.4%	90.5%	90.5%	90.5%	8.7%
2008	Q1	89.7%	89.7%	89.7%	89.5%	89.7%	89.7%	89.7%	7.1%
	Q2	89.5%	89.5%	89.5%	89.5%	89.5%	89.5%	89.5%	9.4%
	Q3	85.5%	85.5%	85.5%	85.4%	85.5%	85.5%	85.5%	24.6%
	Q4	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	12.1%
2009	Q1	96.1%	96.1%	96.0%	96.0%	96.0%	96.0%	96.0%	8.1%
	Q2	96.1%	96.1%	96.1%	96.1%	96.1%	96.1%	96.1%	13.3%
	Q3	56.8%	56.8%	56.8%	56.8%	56.8%	56.8%	56.8%	15.8%
	Q4	97.2%	97.2%	97.2%	97.1%	96.9%	96.9%	96.9%	9.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

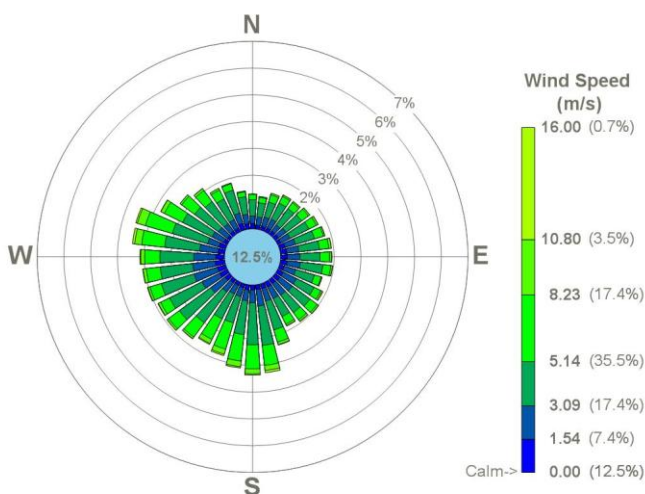
Freeport, IL (KFEP)

Station Info

WBAN: 04876
WMO: 722082
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.2475 N, 89.5810 W
UTM (NAD83, Z15): 782069.90, 4682918.30
Elevation: 254.5 m
Confidence: Medium



Wind Correlation



Station	Correlation
KDVN	0.852
KMLI	0.851
KSFY	0.838
KMQB	0.808
KCWI	0.807
KAWG	0.786
KGBG	0.785
KMUT	0.771
KDBQ	0.767
KMPZ	0.762
KFFL	0.760
KSQI	0.748
KEOK	0.741
KBRL	0.740
KMXO	0.736
KFSW	0.728
KFKA	0.717
KIRK	0.714
KUIN	0.711
KOTM	0.710

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.5%	99.5%	99.5%	99.4%	99.4%	99.5%	99.5%	12.0%
	Q2	99.5%	99.5%	99.5%	99.1%	99.5%	99.5%	99.5%	8.9%
	Q3	97.6%	97.6%	96.4%	94.7%	96.5%	96.5%	96.5%	17.9%
	Q4	97.8%	97.8%	92.4%	91.1%	92.4%	92.4%	92.4%	9.1%
2006	Q1	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	6.8%
	Q2	97.7%	97.7%	97.0%	97.0%	97.0%	97.0%	97.0%	9.8%
	Q3	97.0%	97.0%	96.9%	95.9%	97.0%	97.0%	97.0%	15.4%
	Q4	98.6%	98.6%	98.5%	89.4%	98.6%	98.6%	98.6%	7.2%
2007	Q1	92.1%	92.1%	92.1%	90.6%	92.1%	92.1%	92.1%	5.2%
	Q2	73.8%	73.8%	73.8%	73.7%	73.8%	73.8%	73.8%	6.2%
	Q3	95.2%	95.2%	93.1%	70.6%	93.2%	79.5%	79.5%	16.6%
	Q4	98.8%	98.8%	98.8%	98.6%	98.8%	90.1%	90.1%	11.8%
2008	Q1	97.7%	97.7%	97.3%	96.9%	97.3%	83.3%	83.3%	12.0%
	Q2	99.1%	99.1%	98.3%	98.0%	98.7%	98.8%	98.8%	11.4%
	Q3	98.8%	98.8%	98.6%	98.5%	98.8%	98.7%	98.7%	22.1%
	Q4	99.8%	99.8%	99.3%	99.1%	99.3%	99.3%	99.3%	12.7%
2009	Q1	98.4%	98.4%	98.3%	98.3%	98.4%	98.4%	98.4%	12.9%
	Q2	99.5%	99.5%	99.3%	99.3%	99.3%	99.4%	99.4%	12.4%
	Q3	96.2%	96.2%	95.7%	95.6%	95.8%	95.9%	95.9%	26.2%
	Q4	99.5%	99.5%	99.4%	99.4%	99.5%	99.5%	99.5%	13.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Galesburg, IL

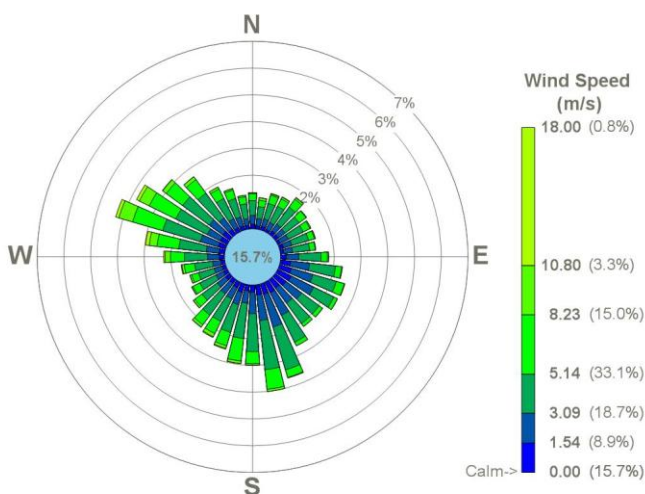
(KGBG)

Station Info

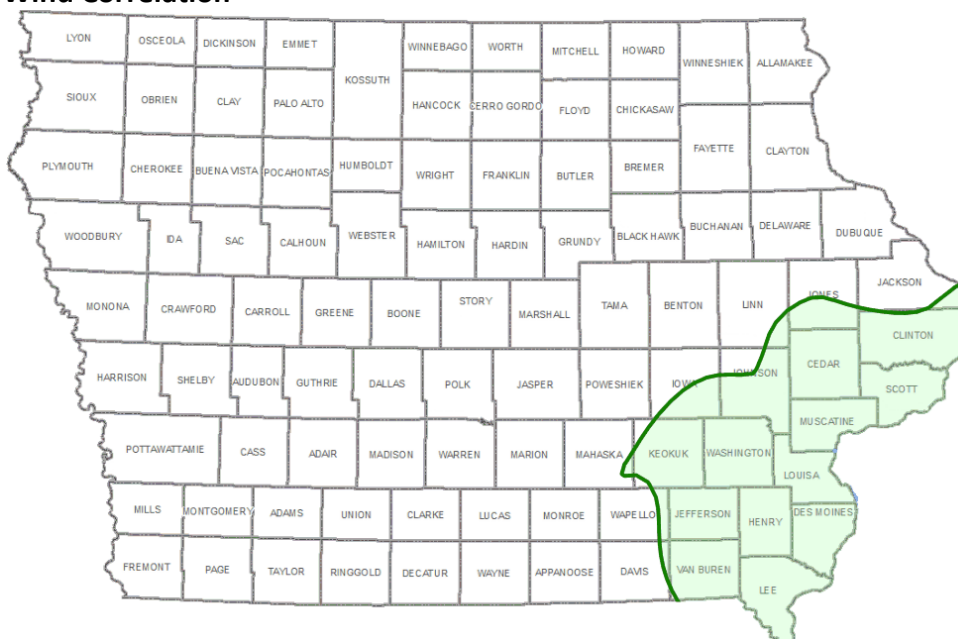
WBAN: 94959
WMO: 722089
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.9328 N, 90.4335 W
UTM (NAD83, Z15): 716076.02, 4534469.09
Elevation: 229.5 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KMUT	0.901
KMQB	0.890
KMPZ	0.864
KAWG	0.862
KFSW	0.855
KDVN	0.846
KFFL	0.840
KMLI	0.833
KSFY	0.832
KBRL	0.826
KUIN	0.821
KEOK	0.810
KIOW	0.803
KOOA	0.802
KCWI	0.800
KVTI	0.794
KCID	0.793
KMXO	0.791
KFEP	0.785
KOXV	0.776

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	98.5%	98.5%	95.9%	95.8%	95.8%	96.0%	96.0%	14.0%
	Q2	99.5%	99.5%	99.1%	99.5%	99.1%	99.5%	99.5%	13.6%
	Q3	98.0%	98.0%	97.5%	97.4%	92.8%	97.7%	97.7%	23.8%
	Q4	98.1%	98.1%	97.8%	86.2%	97.7%	97.8%	97.8%	13.8%
2006	Q1	98.2%	98.2%	98.1%	90.0%	98.1%	98.1%	98.1%	9.0%
	Q2	98.8%	98.8%	98.4%	87.0%	92.4%	92.7%	92.7%	13.6%
	Q3	95.0%	95.0%	94.8%	89.9%	94.9%	94.9%	94.9%	20.8%
	Q4	96.7%	96.7%	96.4%	88.6%	96.5%	96.6%	96.6%	10.8%
2007	Q1	92.8%	92.8%	92.7%	86.6%	92.7%	92.7%	92.7%	11.0%
	Q2	92.8%	92.8%	92.6%	89.7%	92.6%	92.6%	92.6%	14.1%
	Q3	92.1%	92.1%	92.1%	89.2%	90.9%	90.9%	90.9%	21.1%
	Q4	98.7%	98.7%	98.5%	69.3%	98.4%	98.4%	98.4%	13.5%
2008	Q1	92.0%	92.0%	91.3%	90.1%	91.3%	91.4%	91.4%	10.1%
	Q2	98.5%	98.5%	98.4%	67.4%	98.4%	98.4%	98.4%	12.5%
	Q3	94.2%	94.2%	93.8%	82.6%	93.8%	94.1%	94.1%	27.0%
	Q4	94.6%	94.6%	94.0%	94.1%	94.0%	94.2%	94.2%	12.9%
2009	Q1	97.6%	97.6%	94.3%	94.0%	94.3%	94.6%	94.6%	12.3%
	Q2	90.5%	90.5%	89.8%	89.9%	89.7%	90.0%	90.0%	15.5%
	Q3	96.9%	96.9%	96.5%	96.7%	96.5%	96.1%	96.1%	28.6%
	Q4	99.6%	99.6%	99.4%	99.5%	99.4%	99.5%	99.5%	15.1%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Harlan, IA

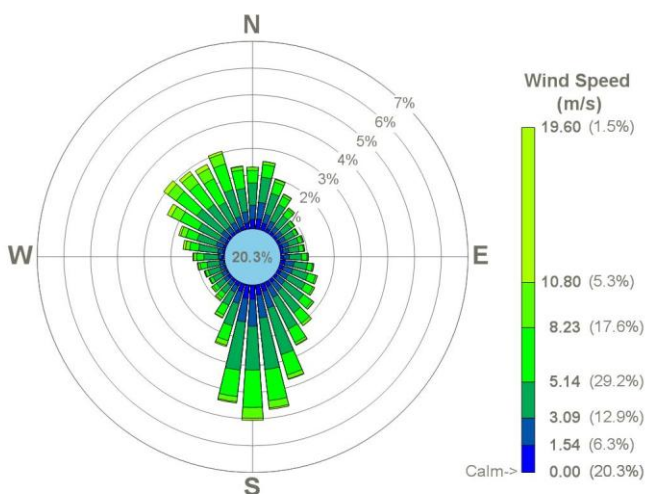
(KHNR)

Station Info

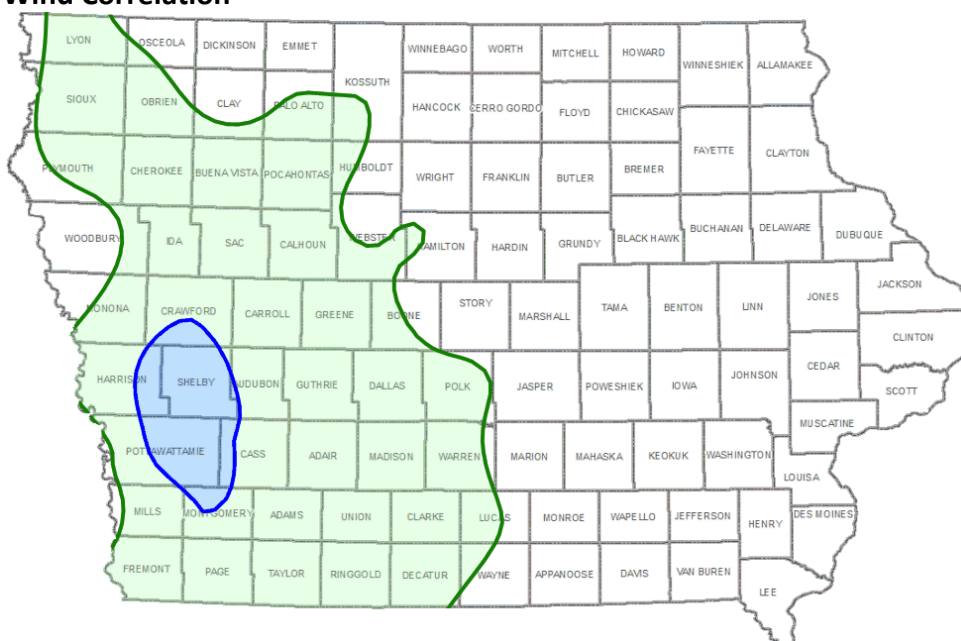
WBAN: NA
WMO: 722097
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.5834 N, 95.3354 W
UTM (NAD83, Z15): 305324.81, 4606157.35
Elevation: 365.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KDNS	0.903
KRDK	0.899
KAIO	0.895
KICL	0.874
KCBF	0.867
KLRJ	0.866
KCSQ	0.856
KADU	0.850
KSDA	0.846
KAFK	0.838
KSTJ	0.831
KORC	0.826
KTQE	0.824
KSHL	0.822
KSLB	0.822
KLYV	0.820
KDSM	0.819
KLWD	0.819
KIKV	0.819
KCIN	0.812

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	94.7%	94.7%	93.5%	93.0%	93.4%	93.6%	93.6%	17.2%
	Q2	89.9%	89.9%	89.9%	89.8%	89.6%	89.9%	89.9%	11.5%
	Q3	96.1%	96.1%	96.1%	95.5%	96.1%	96.1%	96.1%	29.1%
	Q4	91.4%	91.4%	90.2%	89.3%	90.3%	90.3%	90.3%	17.9%
2006	Q1	89.3%	89.3%	89.2%	89.2%	89.3%	89.3%	89.3%	11.8%
	Q2	92.2%	92.2%	92.2%	91.1%	92.2%	92.2%	92.2%	15.2%
	Q3	92.8%	92.8%	92.8%	91.9%	92.8%	92.8%	92.8%	24.3%
	Q4	96.1%	96.1%	95.9%	96.0%	96.1%	96.1%	96.1%	18.3%
2007	Q1	91.5%	91.5%	91.3%	91.5%	91.5%	91.5%	91.5%	12.4%
	Q2	90.9%	90.9%	90.9%	90.9%	90.9%	90.9%	90.9%	15.2%
	Q3	91.5%	91.5%	91.4%	91.4%	91.5%	91.5%	91.5%	31.7%
	Q4	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	35.0%
2008	Q1	96.1%	96.1%	96.1%	96.0%	96.1%	96.1%	96.1%	17.7%
	Q2	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	14.2%
	Q3	94.8%	94.8%	94.8%	94.6%	94.8%	94.8%	94.8%	29.1%
	Q4	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	17.9%
2009	Q1	95.0%	95.0%	95.0%	94.9%	95.0%	95.0%	95.0%	15.1%
	Q2	95.1%	95.1%	95.1%	95.1%	95.1%	95.1%	95.1%	16.3%
	Q3	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	96.5%	36.3%
	Q4	92.0%	92.0%	91.9%	91.9%	92.0%	92.0%	92.0%	18.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Independence, IA

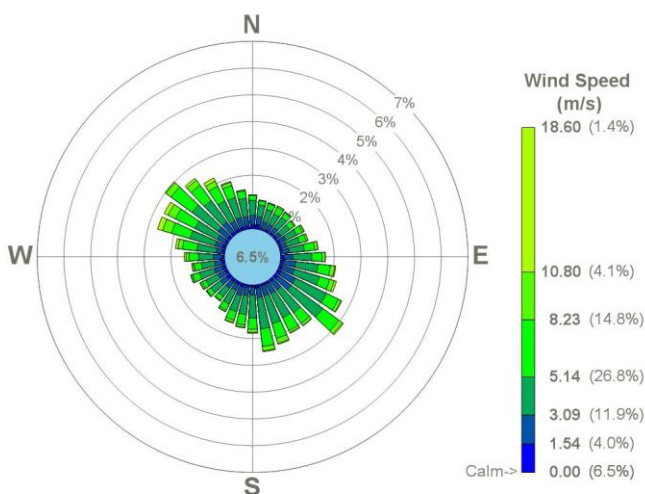
(KIIB)

Station Info

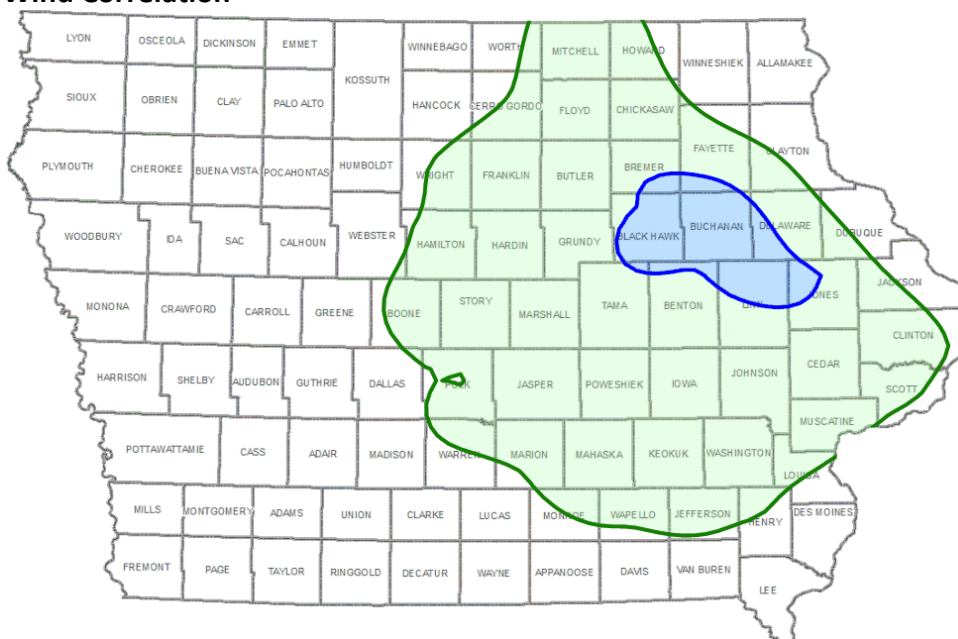
WBAN: NA
WMO: 720293
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.4545 N, 91.9506 W
UTM (NAD83, Z15): 586288.06, 4700774.27
Elevation: 295.0 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KOLZ	0.910
KMXO	0.902
KALO	0.898
KMIW	0.885
KVTI	0.884
KCCY	0.882
KCID	0.875
KOOA	0.873
KIOW	0.857
KTNU	0.845
KBNW	0.842
KPEA	0.842
KFFL	0.821
KDSM	0.818
KDVN	0.818
KAWG	0.817
KOTM	0.817
KMUT	0.811
KEBS	0.809
KCAV	0.809

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.7%	95.7%	94.4%	94.3%	93.5%	94.4%	94.4%	11.4%
	Q2	95.3%	95.3%	95.1%	95.1%	95.1%	95.1%	95.1%	4.7%
	Q3	98.0%	98.0%	97.5%	97.3%	97.5%	97.5%	97.5%	16.8%
	Q4	92.8%	92.8%	92.1%	92.1%	91.9%	92.1%	92.1%	7.4%
2006	Q1	98.4%	98.4%	97.5%	97.5%	97.5%	97.5%	97.5%	3.6%
	Q2	95.8%	95.8%	95.5%	95.5%	95.5%	95.5%	95.5%	7.6%
	Q3	96.3%	96.3%	96.1%	96.0%	96.1%	96.1%	96.1%	12.0%
	Q4	93.6%	93.6%	93.4%	93.4%	93.4%	93.4%	93.4%	5.2%
2007	Q1	95.4%	95.4%	89.1%	94.2%	94.4%	94.4%	94.4%	5.0%
	Q2	92.9%	92.9%	92.8%	92.7%	92.8%	92.8%	92.8%	4.4%
	Q3	34.7%	34.7%	34.6%	34.6%	34.6%	34.6%	34.6%	4.5%
	Q4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2008	Q1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	Q2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	Q3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	Q4	23.0%	23.0%	22.5%	22.4%	22.5%	22.5%	22.5%	3.9%
2009	Q1	93.4%	93.4%	92.4%	92.2%	91.8%	92.8%	92.8%	9.9%
	Q2	98.0%	98.0%	97.9%	97.9%	97.9%	97.9%	97.9%	8.0%
	Q3	99.1%	99.1%	98.0%	99.0%	99.0%	99.0%	99.0%	19.3%
	Q4	96.4%	96.4%	95.2%	95.2%	95.2%	95.4%	95.4%	6.9%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Iowa City, IA

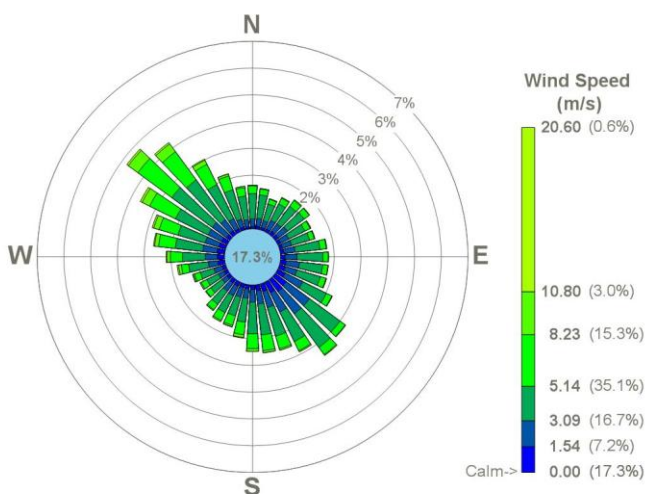
(K1OW)

Station Info

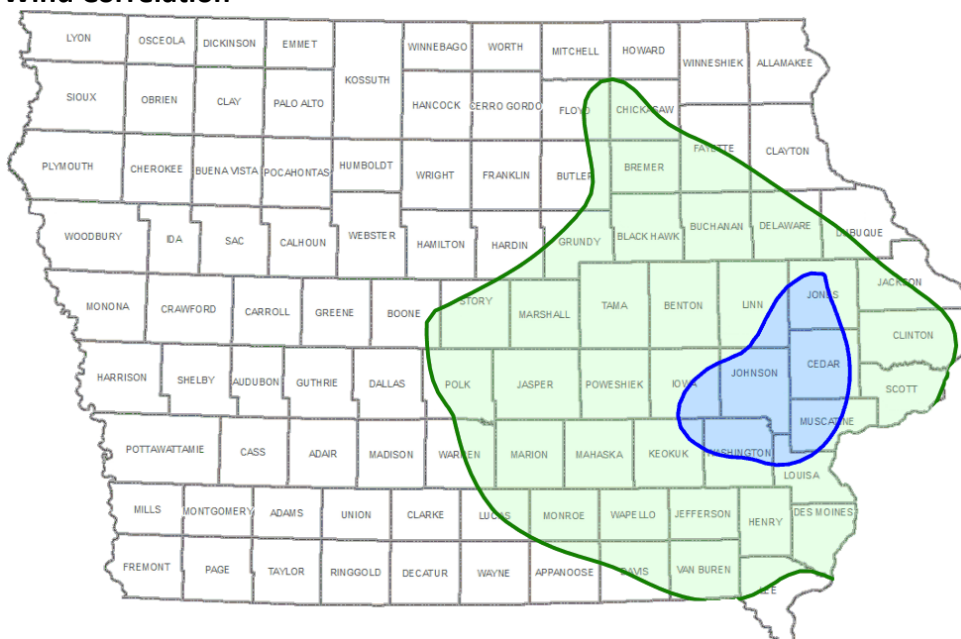
WBAN: 14937
WMO: 725462
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/20/2005

Location Info

Lat-Long: 41.6394 N, 91.5445 W
UTM (NAD83, Z15): 621220.75, 4610763.64
Elevation: 198.4 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KMXO	0.904
KMUT	0.897
KAWG	0.891
KOOA	0.880
KCID	0.875
KFFL	0.863
KIIB	0.857
KMPZ	0.852
KPEA	0.852
KVTI	0.848
KOXV	0.840
KTNU	0.839
KOLZ	0.839
KDVN	0.827
KOTM	0.825
KIKV	0.821
KMIW	0.820
KCCY	0.814
KBRL	0.811
KCWI	0.810

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.5%	96.5%	3.4%	96.4%	96.4%	94.3%	96.5%	15.5%
	Q2	99.8%	99.8%	1.3%	99.7%	99.7%	95.4%	99.8%	16.0%
	Q3	98.9%	98.9%	1.5%	98.9%	98.8%	88.0%	98.9%	22.8%
	Q4	98.6%	98.6%	4.7%	96.9%	97.4%	95.7%	98.4%	19.1%
2006	Q1	98.0%	98.0%	2.2%	98.0%	98.0%	96.4%	97.9%	11.8%
	Q2	99.0%	99.0%	1.6%	99.0%	98.9%	95.8%	98.8%	19.6%
	Q3	99.3%	99.3%	3.8%	96.9%	97.9%	95.4%	97.8%	21.2%
	Q4	98.1%	98.1%	1.6%	97.6%	98.1%	97.3%	97.8%	18.3%
2007	Q1	96.8%	96.8%	3.1%	96.4%	96.6%	96.2%	96.6%	10.6%
	Q2	95.6%	95.6%	3.7%	95.2%	95.5%	93.1%	94.8%	17.0%
	Q3	83.5%	83.5%	2.1%	82.4%	83.4%	81.6%	82.7%	18.7%
	Q4	99.0%	99.0%	2.6%	98.8%	98.9%	97.2%	97.7%	16.1%
2008	Q1	97.0%	97.0%	1.9%	96.7%	97.0%	96.5%	97.0%	14.2%
	Q2	99.3%	99.3%	1.5%	99.1%	99.3%	94.9%	96.1%	13.1%
	Q3	98.8%	98.8%	1.2%	98.6%	98.8%	96.9%	98.6%	25.4%
	Q4	99.3%	99.3%	1.4%	99.1%	99.3%	96.9%	97.6%	15.4%
2009	Q1	98.9%	98.9%	1.1%	97.7%	98.9%	97.4%	97.9%	12.2%
	Q2	99.2%	99.2%	1.9%	98.9%	99.2%	97.7%	98.9%	18.4%
	Q3	99.1%	99.1%	1.1%	99.1%	99.1%	96.7%	98.7%	27.1%
	Q4	99.5%	99.5%	2.3%	99.3%	99.5%	98.8%	99.2%	13.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

NOTE: 257 hours of collocated data was found to replace whole missing records for Q3 of 2007, which qualifies it to meet the 90% criterion.

Jackson, MN

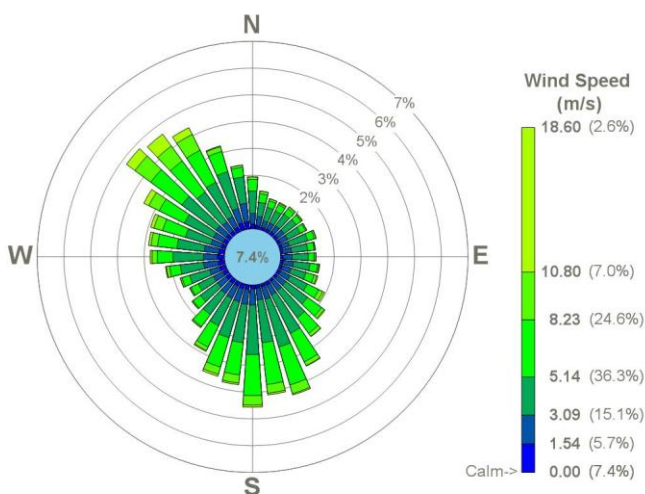
(KMJQ)

Station Info

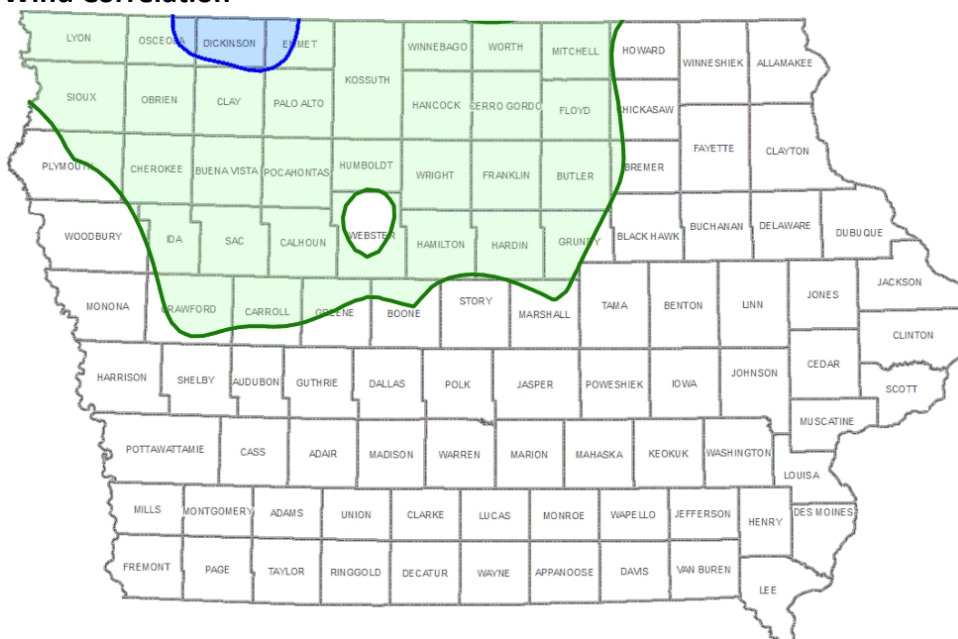
WBAN: 04946
WMO: 726593
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6496 N, 94.9885 W
UTM (NAD83, Z15): 339636.95, 4834877.08
Elevation: 438.6 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KEST	0.906
KOTG	0.890
KSHL	0.886
KSPW	0.883
KAXA	0.882
KSLB	0.872
KMCW	0.863
KRST	0.842
KFSD	0.834
KLYV	0.831
KCIN	0.822
KORC	0.822
KCAV	0.822
KEBS	0.818
KDNS	0.816
KCCY	0.814
KFRM	0.810
KLRJ	0.805
KMIW	0.802
KFKA	0.800

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.8%	99.8%	99.2%	98.5%	99.2%	99.2%	99.2%	5.9%
	Q2	100.0%	100.0%	99.8%	100.0%	100.0%	100.0%	100.0%	4.7%
	Q3	99.7%	99.7%	99.7%	99.6%	99.7%	99.7%	99.7%	10.0%
	Q4	99.7%	99.7%	99.5%	99.5%	99.7%	99.7%	99.7%	7.1%
2006	Q1	99.1%	99.1%	99.0%	98.8%	99.1%	99.1%	99.1%	5.7%
	Q2	99.1%	99.1%	99.0%	98.7%	99.1%	99.1%	99.1%	6.5%
	Q3	99.2%	99.2%	99.1%	98.8%	99.1%	99.1%	99.1%	12.1%
	Q4	99.1%	99.1%	98.9%	98.5%	99.1%	99.0%	99.0%	6.7%
2007	Q1	99.1%	99.1%	98.9%	98.1%	99.0%	99.0%	99.0%	5.7%
	Q2	98.9%	98.9%	98.9%	98.4%	98.9%	98.9%	98.9%	4.3%
	Q3	98.2%	98.2%	98.2%	97.8%	98.2%	98.2%	98.2%	10.5%
	Q4	99.1%	99.1%	99.0%	97.9%	99.1%	99.1%	99.1%	4.7%
2008	Q1	96.8%	96.8%	92.4%	87.8%	92.6%	92.8%	92.8%	6.8%
	Q2	99.1%	99.1%	99.1%	99.0%	99.1%	99.1%	99.1%	6.0%
	Q3	98.7%	98.7%	98.7%	98.3%	97.6%	98.7%	98.7%	13.4%
	Q4	99.9%	99.9%	99.5%	99.5%	99.8%	99.8%	99.8%	5.1%
2009	Q1	99.1%	99.1%	94.4%	94.2%	94.4%	94.5%	94.5%	3.5%
	Q2	99.7%	99.7%	99.6%	99.4%	99.7%	99.7%	99.7%	7.6%
	Q3	99.8%	99.8%	99.8%	99.0%	99.8%	99.8%	99.8%	13.7%
	Q4	99.4%	99.4%	99.1%	98.6%	99.3%	99.3%	99.3%	7.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Keokuk, IA

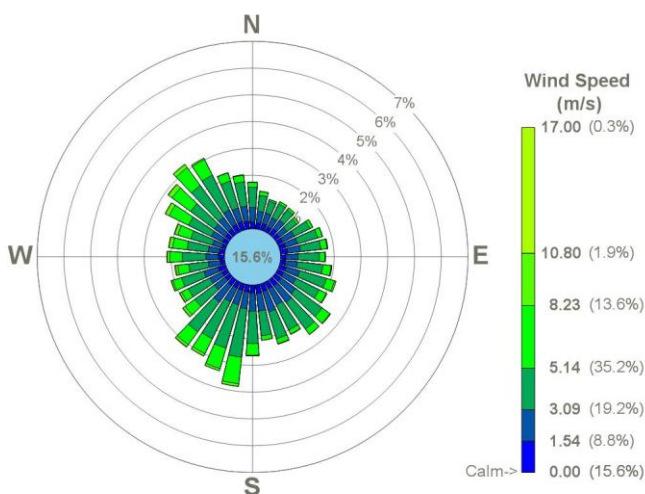
(KEOK)

Station Info

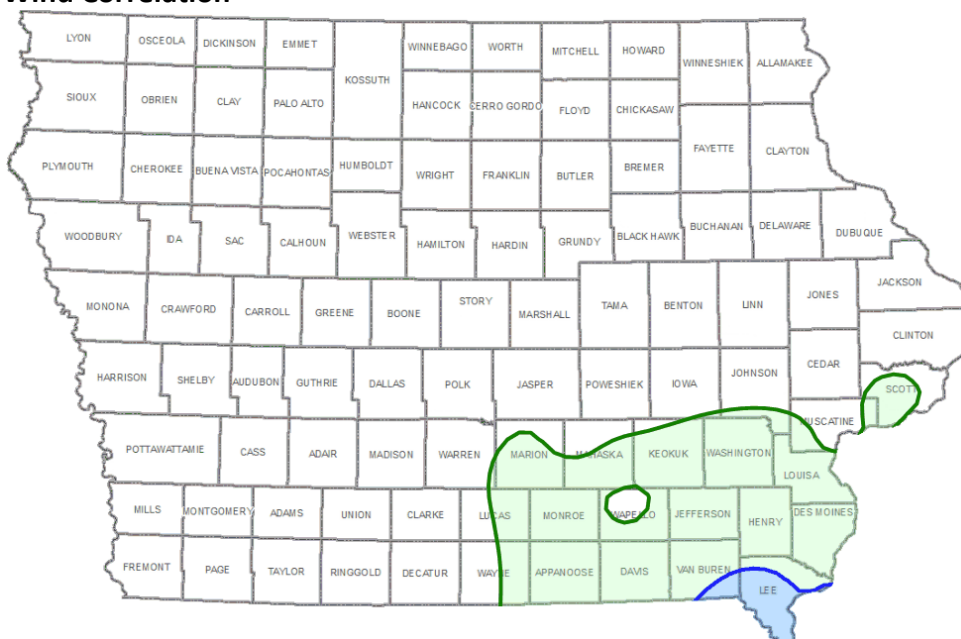
WBAN: NA
WMO: 725456
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.4615 N, 91.4275 W
UTM (NAD83, Z15): 633322.81, 4480168.67
Elevation: 204.2 m
Confidence: Medium



Wind Correlation



Station	Correlation
KBRL	0.898
KIRK	0.889
KFSW	0.887
KMPZ	0.871
KUIN	0.868
KAWG	0.865
KMQB	0.855
KFFL	0.850
KOXX	0.848
KOOA	0.819
KDVN	0.817
KGBG	0.810
KCNC	0.799
KMUT	0.793
KIOW	0.785
KTNU	0.783
KMLI	0.780
KPEA	0.779
KOTM	0.776
KMXO	0.760

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.7%	96.7%	96.7%	96.6%	96.7%	96.7%	96.7%	19.4%
	Q2	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	13.1%
	Q3	91.4%	91.4%	91.4%	91.3%	91.4%	91.4%	91.4%	21.0%
	Q4	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	12.7%
2006	Q1	94.0%	94.0%	93.9%	93.9%	94.0%	94.0%	94.0%	7.6%
	Q2	96.2%	96.2%	96.1%	96.1%	96.2%	96.2%	96.2%	12.4%
	Q3	93.6%	93.6%	93.2%	92.6%	93.3%	93.3%	93.3%	16.3%
	Q4	92.4%	92.4%	92.4%	90.9%	92.4%	92.4%	92.4%	11.6%
2007	Q1	92.8%	92.8%	92.8%	92.7%	92.8%	92.8%	92.8%	8.3%
	Q2	95.6%	95.6%	95.5%	95.6%	95.6%	95.6%	95.6%	15.5%
	Q3	85.7%	85.7%	85.7%	85.7%	85.7%	85.7%	85.7%	16.0%
	Q4	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	94.1%	13.9%
2008	Q1	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	9.7%
	Q2	95.3%	95.3%	95.2%	95.2%	95.3%	95.3%	95.3%	10.2%
	Q3	96.2%	96.2%	96.1%	95.1%	96.2%	96.2%	96.2%	26.0%
	Q4	96.8%	96.8%	96.7%	96.7%	96.8%	96.8%	96.8%	14.4%
2009	Q1	96.3%	96.3%	96.3%	95.8%	96.3%	96.3%	96.3%	10.0%
	Q2	98.4%	98.4%	98.2%	97.8%	98.4%	98.4%	98.4%	19.2%
	Q3	98.8%	98.8%	98.8%	96.7%	98.8%	98.8%	98.8%	36.6%
	Q4	96.3%	96.3%	96.3%	96.3%	96.3%	96.3%	96.3%	17.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Kirksville, MO

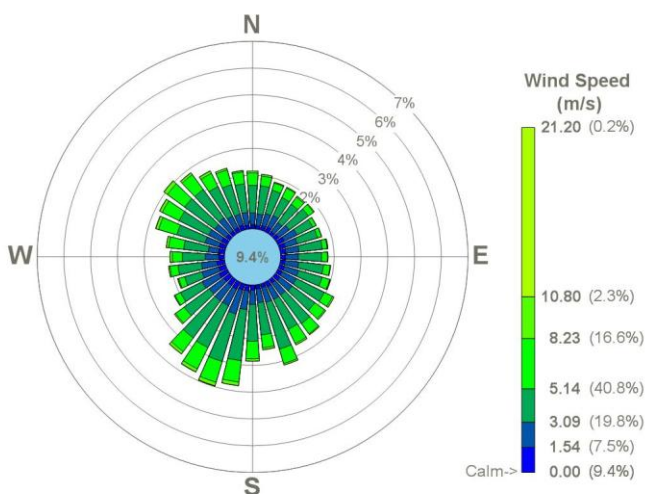
(KIRK)

Station Info

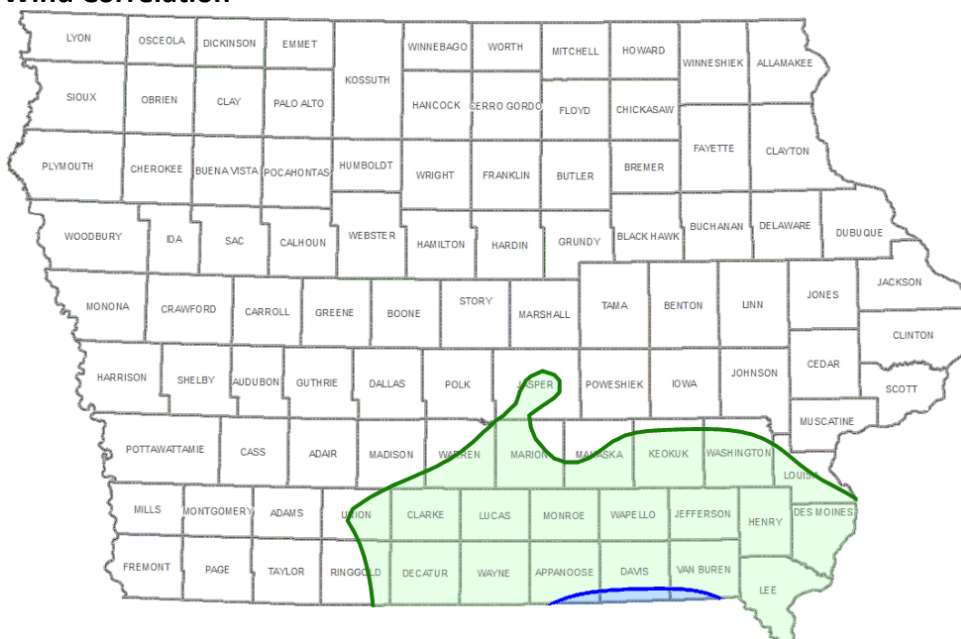
WBAN: 14938
WMO: 724455
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/7/2005

Location Info

Lat-Long: 40.0872 N, 92.5458 W
UTM (NAD83, Z15): 538721.08, 4437534.47
Elevation: 292.6 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KEOK	0.889
KUIN	0.869
KMPZ	0.867
KBRL	0.861
KFFL	0.856
KOXV	0.853
KFSW	0.852
KCNC	0.846
KAWG	0.842
KOOA	0.828
KLWD	0.825
KMQB	0.816
KTNU	0.815
KOTM	0.810
KCSQ	0.799
KDVN	0.789
KIKV	0.772
KBNW	0.769
KGBG	0.763
KMUT	0.759

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.0%	95.0%	0.6%	94.6%	94.8%	93.6%	94.8%	5.9%
	Q2	99.4%	99.4%	0.3%	99.0%	99.3%	97.1%	99.3%	6.1%
	Q3	98.9%	98.9%	0.9%	98.2%	98.6%	95.2%	98.6%	18.4%
	Q4	96.9%	96.9%	1.3%	96.7%	96.9%	96.4%	96.9%	10.6%
2006	Q1	98.4%	98.4%	0.5%	98.2%	98.3%	97.7%	98.3%	4.4%
	Q2	98.9%	98.9%	0.7%	98.6%	98.8%	97.1%	98.4%	10.4%
	Q3	98.7%	98.7%	0.6%	98.6%	98.6%	97.2%	98.7%	14.3%
	Q4	98.5%	98.5%	0.6%	98.2%	98.3%	97.6%	98.1%	5.3%
2007	Q1	97.6%	97.6%	0.8%	97.4%	97.6%	96.9%	97.5%	4.1%
	Q2	97.8%	97.8%	0.3%	97.8%	97.7%	96.3%	97.8%	10.5%
	Q3	92.7%	92.7%	0.8%	91.3%	92.6%	90.0%	92.2%	11.6%
	Q4	98.6%	98.6%	1.1%	97.7%	98.2%	97.6%	98.1%	7.0%
2008	Q1	97.8%	97.8%	0.3%	97.8%	97.7%	96.7%	97.8%	6.1%
	Q2	99.1%	99.1%	0.3%	98.9%	99.1%	97.3%	98.9%	8.6%
	Q3	99.0%	99.0%	1.2%	98.5%	98.8%	96.9%	98.6%	17.1%
	Q4	99.8%	99.8%	0.2%	97.0%	97.0%	96.2%	96.9%	7.7%
2009	Q1	98.8%	98.8%	0.1%	98.6%	98.7%	97.6%	98.6%	5.3%
	Q2	98.8%	98.8%	1.5%	98.6%	98.8%	96.7%	98.6%	11.1%
	Q3	99.6%	99.6%	0.1%	99.5%	99.5%	97.2%	99.4%	16.6%
	Q4	99.5%	99.5%	0.2%	99.3%	99.5%	98.7%	99.4%	7.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Knoxville, IA

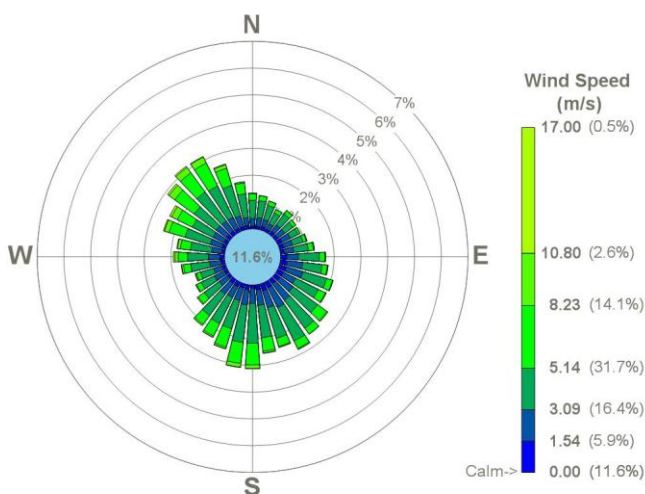
(KOXV)

Station Info

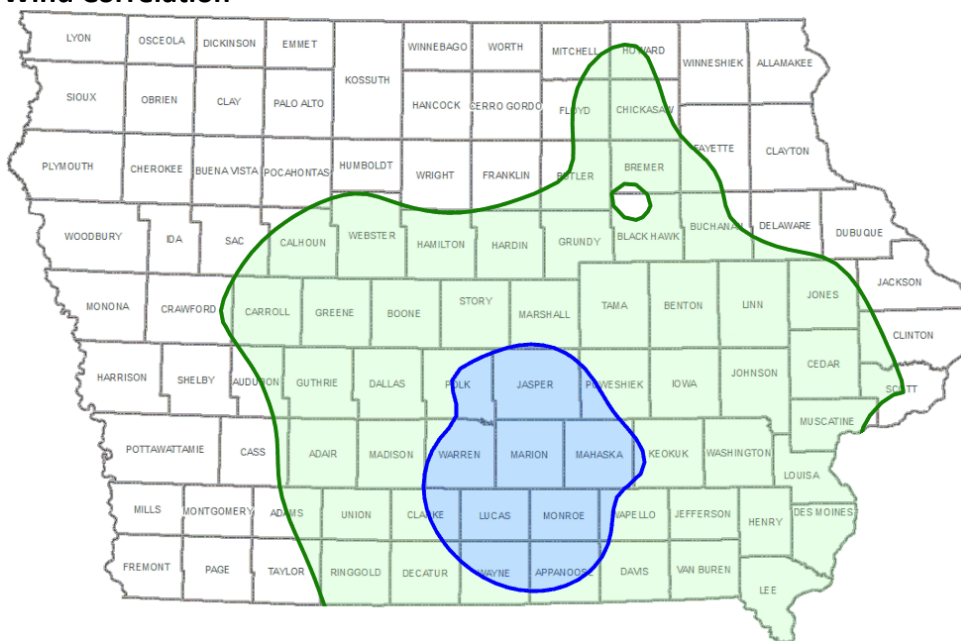
WBAN: NA
WMO: 725493
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.2984 N, 93.1114 W
UTM (NAD83, Z15): 490673.47, 4571889.14
Elevation: 283.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KCNC	0.936
KTNU	0.930
KOOA	0.909
KPEA	0.909
KIKV	0.907
KAWG	0.892
KFFL	0.890
KDSM	0.889
KOTM	0.887
KBNW	0.884
KMPZ	0.870
KAMW	0.869
KMIW	0.867
KLWD	0.860
KIRK	0.853
KCSQ	0.850
KEOK	0.848
KBRL	0.844
KIOW	0.840
KCID	0.837

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	9.9%
	Q2	81.3%	81.3%	81.2%	81.3%	81.3%	81.3%	81.3%	11.3%
	Q3	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	16.6%
	Q4	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	15.1%
2006	Q1	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	16.7%
	Q2	79.9%	79.9%	79.8%	79.9%	79.9%	79.9%	79.9%	19.4%
	Q3	90.4%	90.4%	90.4%	90.3%	90.4%	90.4%	90.4%	29.0%
	Q4	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	92.7%	13.5%
2007	Q1	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	9.3%
	Q2	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	8.2%
	Q3	80.8%	80.8%	80.8%	80.7%	80.8%	80.8%	80.8%	8.8%
	Q4	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	5.1%
2008	Q1	68.1%	68.1%	68.1%	68.0%	68.1%	68.1%	68.1%	6.1%
	Q2	74.5%	74.5%	74.4%	74.5%	74.5%	74.5%	74.5%	6.2%
	Q3	95.5%	95.5%	95.5%	95.4%	95.5%	95.5%	95.5%	15.0%
	Q4	49.2%	49.2%	49.2%	49.2%	49.2%	49.2%	49.2%	4.2%
2009	Q1	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	5.5%
	Q2	87.3%	87.3%	87.3%	87.2%	87.3%	87.3%	87.3%	8.2%
	Q3	86.9%	86.9%	86.9%	86.8%	86.9%	86.9%	86.9%	16.2%
	Q4	99.5%	99.5%	99.4%	99.5%	99.5%	99.5%	99.5%	8.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

La Crosse, WI

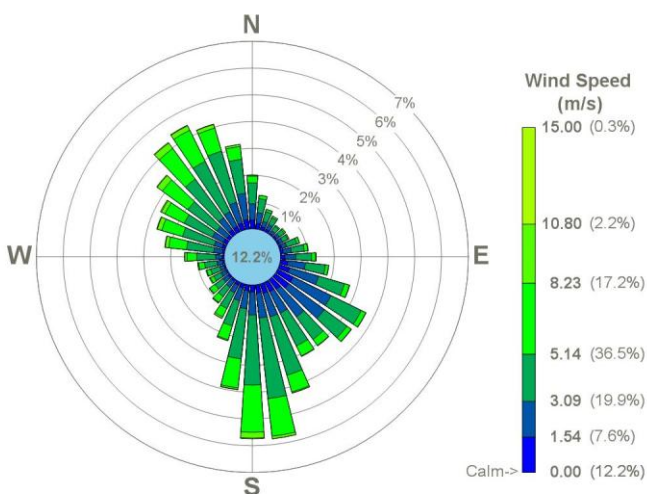
(KLSE)

Station Info

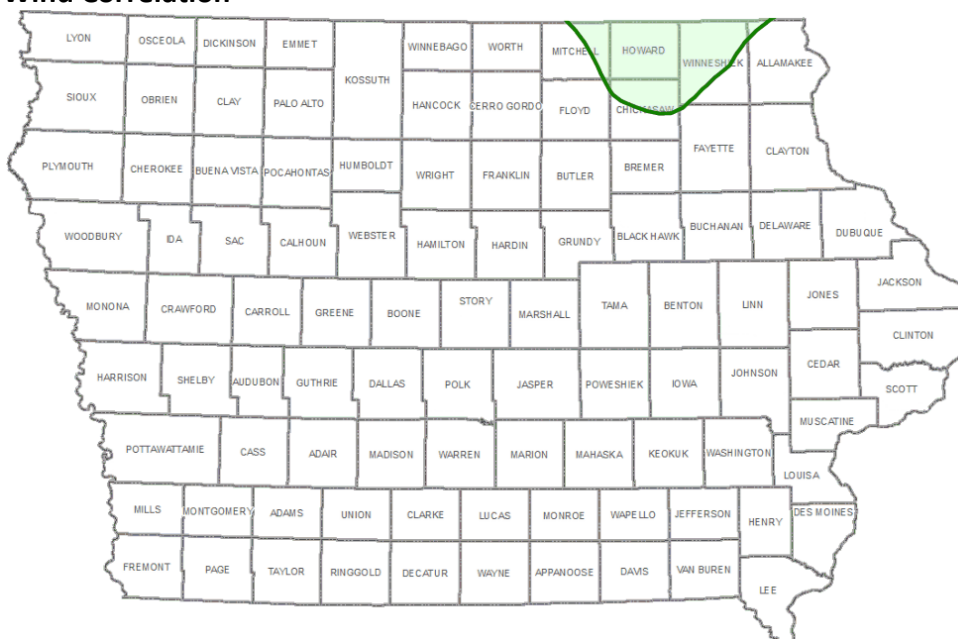
WBAN: 14920
WMO: 726430
Anemometer Height: 10.0 m
1-Min Availability Date: 10/6/2000
IFW Installation Date: 9/20/2006

Location Info

Lat-Long: 43.8792 N, 91.2530 W
UTM (NAD83, Z15): 640348.93, 4859939.33
Elevation: 198.7 m
Confidence: High



Wind Correlation



Station	Correlation
KFKA	0.824
KAUM	0.822
KDEH	0.802
KOLZ	0.796
KCCY	0.795
KVTI	0.778
KCID	0.767
KMXO	0.745
KRST	0.740
KEBS	0.733
KALO	0.729
KIIB	0.727
KIKV	0.723
KAXA	0.721
KOXX	0.717
KCAV	0.715
KMCW	0.712
KAWG	0.711
KMPZ	0.710
KAMW	0.708

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	0.1%	97.9%	100.0%	97.2%	99.4%	12.2%
	Q2	99.9%	99.9%	1.1%	99.2%	98.9%	95.8%	99.5%	6.9%
	Q3	99.5%	99.5%	1.0%	98.4%	99.2%	94.2%	99.5%	11.0%
	Q4	100.0%	100.0%	0.6%	97.9%	99.8%	98.3%	99.8%	11.8%
2006	Q1	95.4%	95.4%	1.3%	95.2%	95.4%	94.4%	95.4%	7.4%
	Q2	98.9%	98.9%	1.4%	98.9%	98.7%	95.3%	98.9%	7.6%
	Q3	99.6%	99.6%	1.1%	99.5%	99.5%	94.8%	99.3%	12.1%
	Q4	98.1%	98.1%	0.7%	97.8%	97.8%	97.0%	97.8%	11.1%
2007	Q1	97.1%	97.1%	1.8%	96.9%	97.0%	96.2%	96.9%	13.1%
	Q2	97.5%	97.5%	0.5%	97.5%	97.5%	94.5%	97.4%	9.2%
	Q3	96.4%	96.4%	0.8%	96.2%	96.3%	92.5%	96.2%	14.1%
	Q4	98.5%	98.5%	1.5%	98.4%	98.1%	97.6%	98.5%	12.3%
2008	Q1	96.4%	96.4%	0.9%	96.3%	96.4%	95.6%	96.4%	16.1%
	Q2	98.4%	98.4%	0.5%	98.1%	98.3%	96.3%	98.3%	11.6%
	Q3	98.8%	98.8%	0.3%	98.7%	98.8%	93.7%	98.3%	15.9%
	Q4	99.5%	99.5%	0.5%	99.4%	99.5%	98.9%	99.5%	12.1%
2009	Q1	96.6%	96.6%	3.1%	96.3%	96.5%	95.9%	96.6%	15.0%
	Q2	99.3%	99.3%	0.4%	99.2%	99.3%	96.4%	99.2%	11.6%
	Q3	99.2%	99.2%	0.8%	99.1%	99.2%	95.9%	99.1%	20.2%
	Q4	98.1%	98.1%	1.5%	97.1%	97.2%	96.1%	97.2%	12.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Lamoni, IA

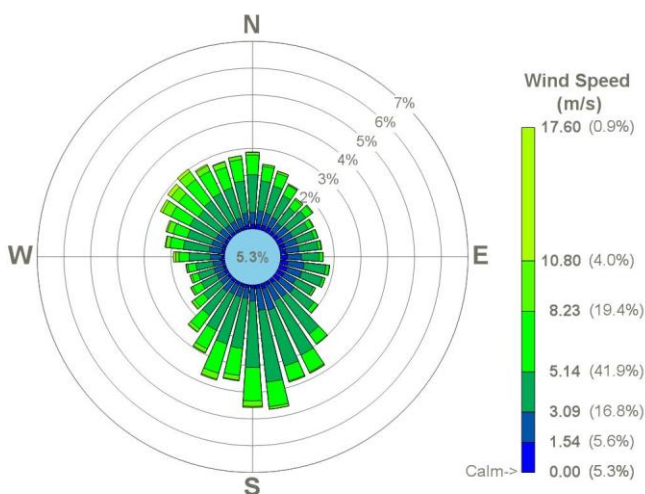
(KLWD)

Station Info

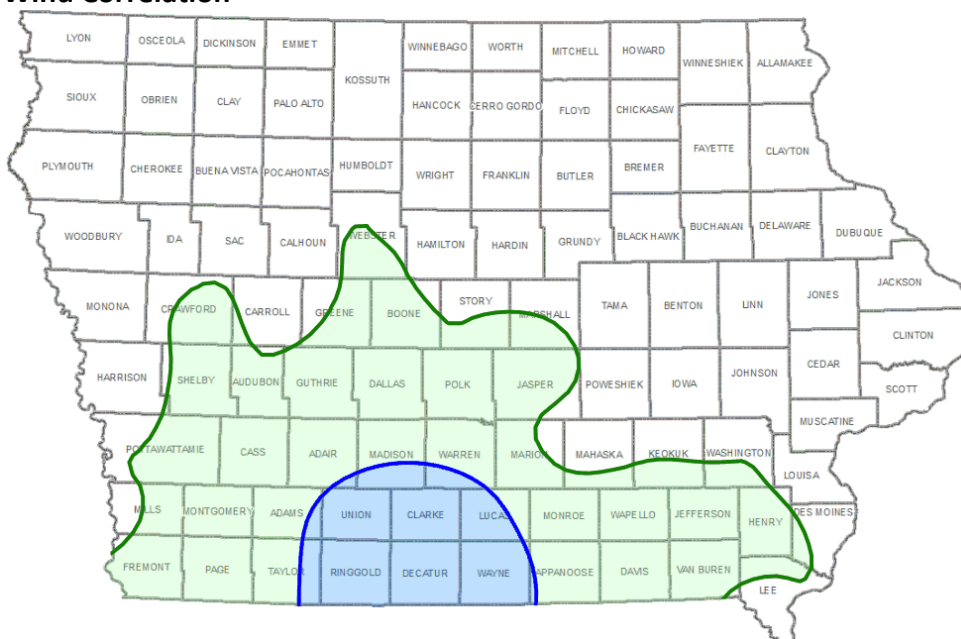
WBAN: 94991
WMO: 725499
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 5/29/2007

Location Info

Lat-Long: 40.6303 N, 93.9005 W
UTM (NAD83, Z15): 423844.85, 4498141.19
Elevation: 345.9 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KCSQ	0.926
KCNC	0.913
KOXX	0.860
KDSM	0.860
KSDA	0.855
KAFK	0.855
KRDK	0.849
KIKV	0.848
KOTM	0.839
KICL	0.837
KTNU	0.836
KSTJ	0.829
KIRK	0.825
KAIO	0.821
KDNS	0.820
KMPZ	0.819
KHNR	0.819
KFFL	0.815
KCBF	0.813
KUIN	0.811

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	98.9%	98.9%	0.6%	98.8%	98.8%	97.3%	98.8%	11.7%
	Q2	99.5%	99.5%	0.9%	99.3%	99.4%	95.8%	99.5%	3.1%
	Q3	90.9%	90.9%	1.4%	90.5%	90.6%	86.2%	90.8%	5.8%
	Q4	92.9%	92.9%	1.2%	92.2%	92.9%	90.8%	92.9%	2.9%
2006	Q1	95.2%	95.2%	0.6%	95.2%	95.2%	93.8%	95.2%	1.7%
	Q2	98.6%	98.6%	1.6%	98.4%	98.5%	94.9%	98.5%	3.4%
	Q3	99.0%	99.0%	1.5%	98.7%	98.9%	94.0%	98.9%	5.2%
	Q4	90.6%	90.6%	2.1%	90.5%	89.9%	89.2%	90.5%	1.9%
2007	Q1	92.1%	92.1%	1.6%	92.0%	92.1%	91.2%	92.1%	1.5%
	Q2	97.0%	97.0%	1.6%	96.6%	96.9%	94.2%	96.6%	4.9%
	Q3	95.8%	95.8%	2.9%	93.8%	94.6%	91.2%	94.6%	8.3%
	Q4	93.9%	93.9%	1.4%	93.5%	93.8%	93.1%	93.7%	3.3%
2008	Q1	96.3%	96.3%	1.9%	94.4%	96.2%	95.2%	95.7%	4.3%
	Q2	97.6%	97.6%	0.9%	93.6%	94.5%	93.1%	94.6%	5.3%
	Q3	97.5%	97.5%	0.9%	97.2%	97.4%	94.9%	97.3%	10.2%
	Q4	97.9%	97.9%	2.7%	97.8%	95.5%	97.2%	97.8%	4.5%
2009	Q1	95.6%	95.6%	0.5%	95.6%	95.6%	94.9%	95.6%	3.5%
	Q2	97.5%	97.5%	0.9%	97.3%	97.3%	94.9%	97.4%	6.4%
	Q3	99.5%	99.5%	0.5%	99.4%	99.5%	96.5%	99.5%	12.5%
	Q4	98.5%	98.5%	1.6%	98.3%	97.8%	98.0%	98.4%	4.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

NOTE: Five hours of collocated temperature data was found for Q4 of 2006, which qualifies the data to meet the 90% criterion.

Le Mars, IA

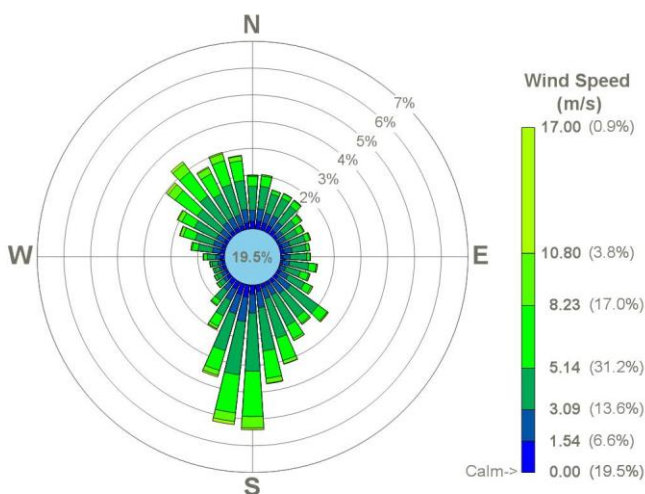
(KLRJ)

Station Info

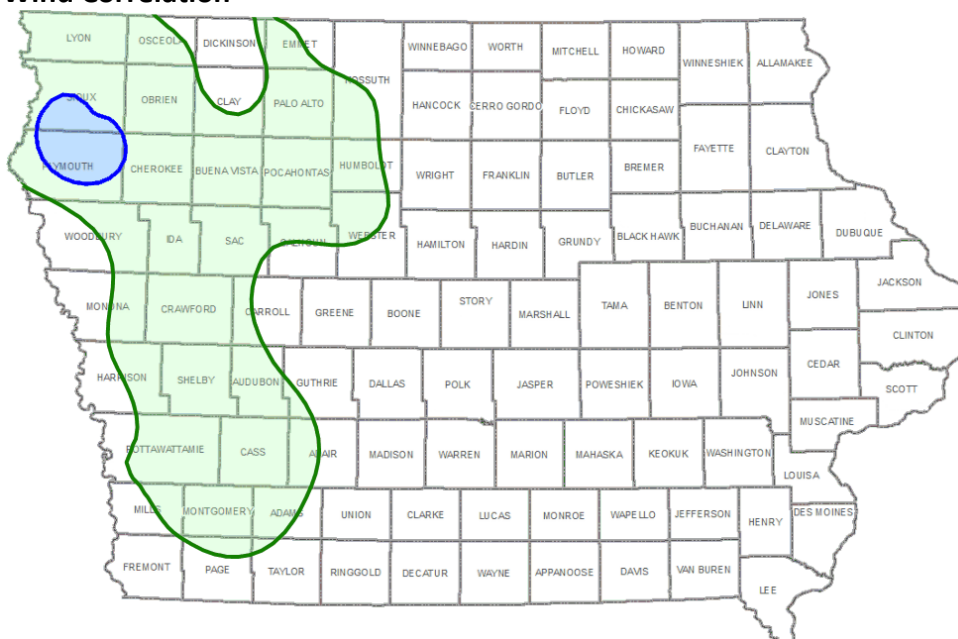
WBAN: NA
WMO: 725484
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.7754 N, 96.1922 W
UTM (NAD83, Z15): 238852.70, 4740817.00
Elevation: 365.2 m
Confidence: Medium



Wind Correlation



Station	Correlation
KORC	0.896
KDNS	0.879
KSHL	0.873
KHNR	0.866
KLYV	0.865
KAIO	0.853
KRDK	0.842
KFSD	0.839
KFOD	0.827
KCBF	0.824
KAXA	0.817
KADU	0.816
KSLB	0.809
KEST	0.807
KMJQ	0.805
KICL	0.790
KSPW	0.778
KCSQ	0.777
KAFK	0.776
KSDA	0.769

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.8%	97.8%	97.1%	97.1%	97.1%	97.1%	97.1%	18.5%
	Q2	94.4%	94.4%	94.4%	94.3%	94.4%	94.4%	94.4%	11.1%
	Q3	95.2%	95.2%	95.2%	95.2%	95.2%	95.2%	95.2%	21.4%
	Q4	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	23.0%
2006	Q1	95.9%	95.9%	95.7%	95.5%	95.7%	95.7%	95.7%	16.0%
	Q2	85.3%	85.3%	85.3%	85.3%	85.3%	85.3%	85.3%	15.0%
	Q3	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	23.8%
	Q4	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	21.6%
2007	Q1	87.7%	87.7%	87.7%	87.7%	87.7%	87.7%	87.7%	11.4%
	Q2	90.6%	90.6%	90.6%	90.6%	90.6%	90.6%	90.6%	13.6%
	Q3	83.0%	83.0%	83.0%	82.1%	82.9%	82.9%	82.9%	18.6%
	Q4	93.3%	93.3%	93.2%	89.9%	93.2%	93.2%	93.2%	23.2%
2008	Q1	96.0%	96.0%	95.4%	95.3%	95.4%	95.4%	95.4%	21.3%
	Q2	91.2%	91.2%	91.2%	91.2%	91.2%	91.2%	91.2%	15.5%
	Q3	83.7%	83.7%	83.7%	80.5%	83.6%	83.7%	83.7%	22.8%
	Q4	94.7%	94.7%	94.6%	94.6%	94.7%	94.7%	94.7%	19.5%
2009	Q1	94.2%	94.2%	93.9%	90.8%	93.9%	93.9%	93.9%	16.8%
	Q2	96.4%	96.4%	96.3%	95.9%	96.3%	96.3%	96.3%	19.0%
	Q3	97.3%	97.3%	97.3%	97.2%	97.3%	97.3%	97.3%	34.5%
	Q4	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	22.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Luverne, MN

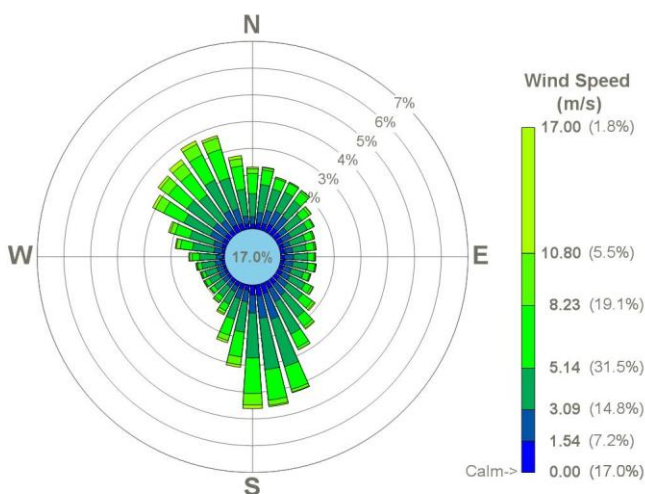
(KLYV)

Station Info

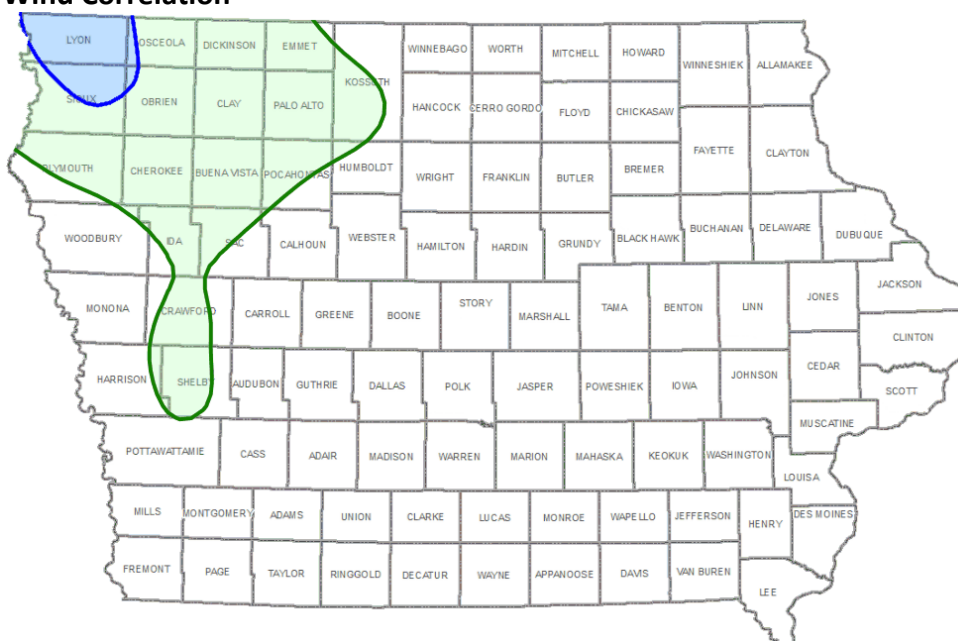
WBAN: 54926
WMO: 722006
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6170 N, 96.2170 W
UTM (NAD83, Z15): 240419.80, 4834365.10
Elevation: 435.0 m
Confidence: Low



Wind Correlation



Station Correlation

Station	Correlation
KSHL	0.908
KORC	0.895
KLRJ	0.865
KFSD	0.864
KEST	0.837
KSPW	0.836
KMJQ	0.831
KAXA	0.824
KSLB	0.823
KHNR	0.820
KOTG	0.812
KDNS	0.811
KEBS	0.782
KTQE	0.769
KAUM	0.768
KCBF	0.766
KRDK	0.766
KADU	0.762
KIKV	0.762
KFOD	0.760

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	56.5%	56.5%	56.5%	56.5%	56.0%	56.5%	56.5%	10.0%
	Q2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	8.0%
	Q3	99.6%	99.6%	99.6%	99.2%	99.0%	99.6%	99.6%	19.8%
	Q4	99.7%	99.7%	99.6%	99.5%	95.1%	99.6%	99.6%	20.3%
2006	Q1	99.4%	99.4%	99.1%	98.9%	99.1%	99.1%	99.1%	11.7%
	Q2	99.0%	99.0%	99.0%	98.9%	99.0%	99.0%	99.0%	14.0%
	Q3	99.1%	99.1%	99.1%	99.0%	99.1%	99.1%	99.1%	22.3%
	Q4	99.1%	99.1%	99.1%	99.0%	99.1%	99.1%	99.1%	18.7%
2007	Q1	98.2%	98.2%	98.2%	98.1%	98.2%	98.2%	98.2%	11.0%
	Q2	98.9%	98.9%	98.9%	98.8%	98.9%	98.9%	98.9%	12.4%
	Q3	98.1%	98.1%	98.1%	97.9%	98.1%	98.1%	98.1%	21.4%
	Q4	99.5%	99.5%	99.5%	99.3%	99.5%	99.5%	99.5%	20.2%
2008	Q1	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	19.0%
	Q2	98.9%	98.9%	98.9%	98.8%	98.9%	98.9%	98.9%	12.6%
	Q3	98.8%	98.8%	98.8%	98.7%	98.8%	98.8%	98.8%	26.4%
	Q4	99.9%	99.9%	99.9%	99.5%	99.9%	99.9%	99.9%	16.1%
2009	Q1	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	11.7%
	Q2	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	14.3%
	Q3	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	31.0%
	Q4	99.5%	99.5%	99.5%	99.1%	99.5%	99.5%	99.5%	19.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Macomb, IL

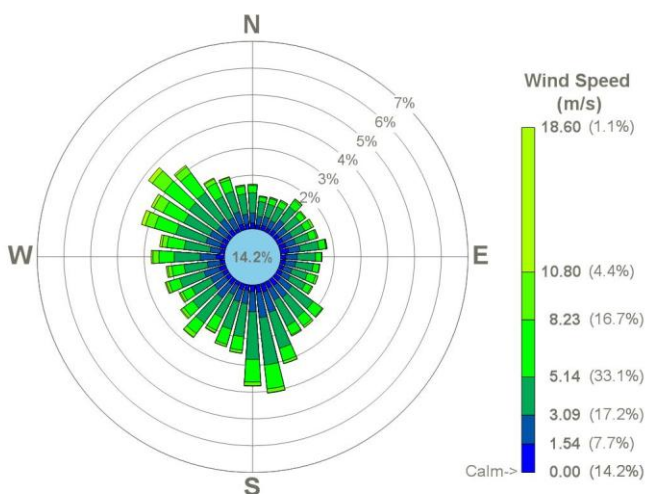
(KMQB)

Station Info

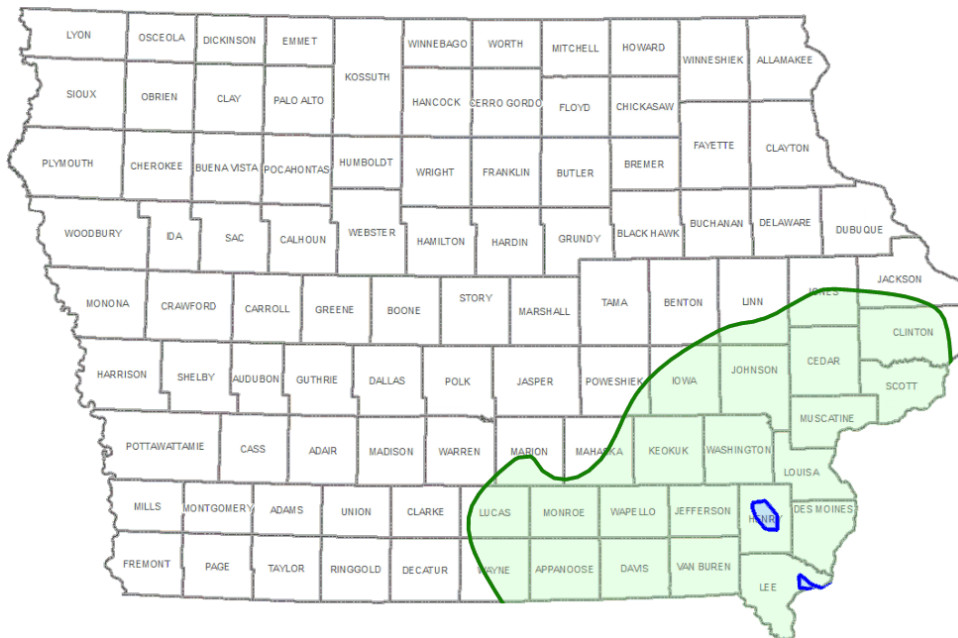
WBAN: 04949
WMO: 722157
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.5176 N, -90.6481 W
UTM (NAD83, Z15): 699242.30, 4487865.88
Elevation: 207.0 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KFSW	0.905
KMPZ	0.901
KAWG	0.895
KUIN	0.890
KGBG	0.890
KFFL	0.889
KBRL	0.878
KMUT	0.876
KEOK	0.855
KDVN	0.847
KOTM	0.838
KMLI	0.825
KOOA	0.822
KIRK	0.816
KCNC	0.815
KFEP	0.808
KOXV	0.805
KCID	0.805
KCWI	0.802
KIOW	0.802

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.6%	99.6%	99.2%	99.3%	98.0%	99.5%	99.5%	12.9%
	Q2	99.5%	99.5%	98.8%	98.9%	99.0%	99.5%	99.5%	13.7%
	Q3	99.0%	99.0%	98.6%	98.3%	90.9%	98.9%	98.9%	28.0%
	Q4	98.2%	98.2%	97.9%	95.7%	97.9%	98.1%	98.1%	11.6%
2006	Q1	98.3%	98.3%	98.0%	96.9%	95.0%	98.2%	98.2%	7.3%
	Q2	98.5%	98.5%	97.8%	92.0%	97.9%	98.4%	98.4%	11.5%
	Q3	98.4%	98.4%	97.6%	88.8%	97.9%	98.2%	98.2%	21.6%
	Q4	94.6%	94.6%	94.4%	90.5%	93.7%	94.6%	94.6%	10.9%
2007	Q1	92.5%	92.5%	91.4%	90.5%	91.2%	92.0%	92.0%	6.9%
	Q2	97.1%	97.1%	96.6%	88.0%	96.7%	96.9%	96.9%	14.5%
	Q3	95.9%	95.9%	95.5%	91.3%	95.6%	95.8%	95.8%	24.5%
	Q4	98.7%	98.7%	98.2%	94.2%	97.1%	98.5%	98.5%	10.8%
2008	Q1	83.8%	83.8%	83.4%	83.6%	83.5%	83.7%	83.7%	6.2%
	Q2	97.7%	97.7%	96.8%	97.4%	96.8%	97.6%	97.6%	7.3%
	Q3	97.9%	97.9%	97.1%	97.7%	97.3%	97.8%	97.8%	28.0%
	Q4	66.9%	66.9%	66.4%	66.6%	66.4%	66.5%	66.5%	7.3%
2009	Q1	92.3%	92.3%	91.6%	91.2%	91.5%	91.5%	91.6%	7.6%
	Q2	97.7%	97.7%	97.0%	97.4%	97.1%	97.6%	97.6%	13.3%
	Q3	99.2%	99.2%	98.5%	99.1%	98.6%	99.1%	99.1%	29.3%
	Q4	87.5%	87.5%	87.0%	87.1%	87.0%	87.4%	87.4%	10.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Marshalltown, IA

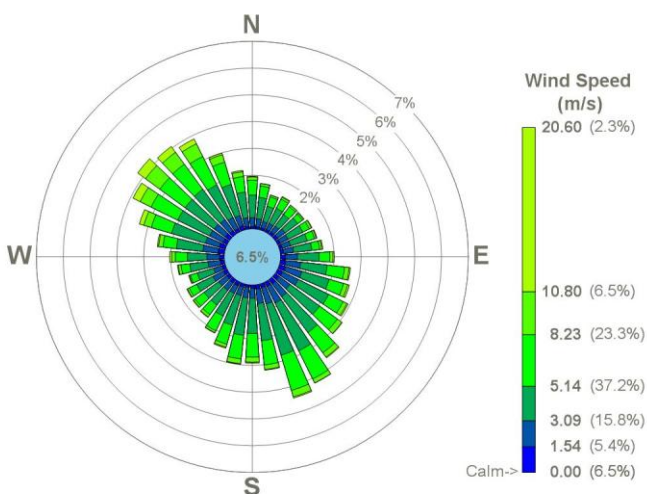
(KMIW)

Station Info

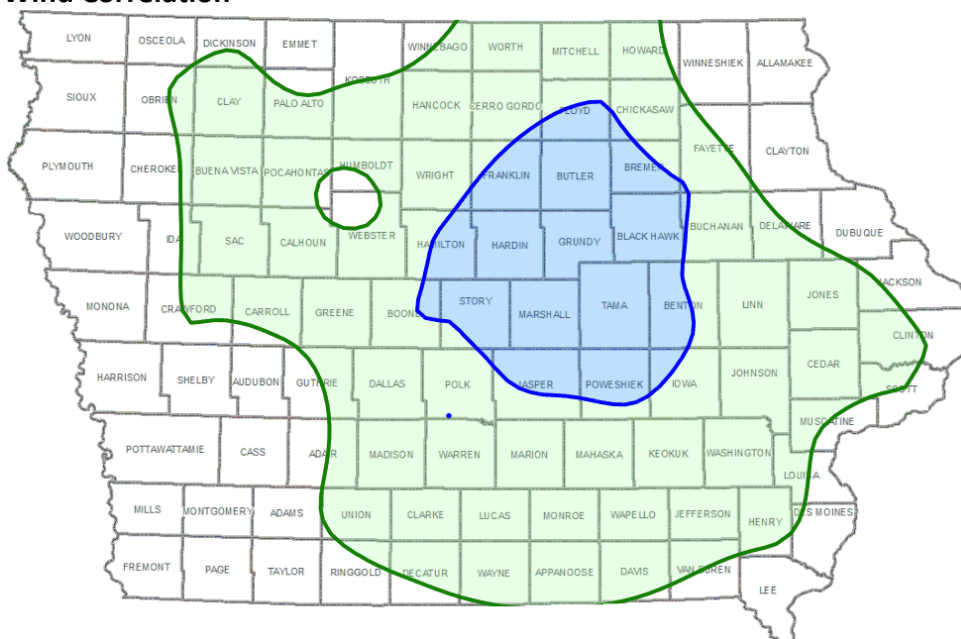
WBAN: 94988
WMO: 725461
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/20/2005

Location Info

Lat-Long: 42.1106 N, 92.9163 W
UTM (NAD83, Z15): 506919.82, 4662059.52
Elevation: 293.8 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KALO	0.928
KTNU	0.909
KBNW	0.904
KCCY	0.903
KDSM	0.902
KAMW	0.900
KOLZ	0.894
KVTI	0.890
KOOA	0.887
KEBS	0.886
KIIB	0.885
KCID	0.882
KOTM	0.869
KIKV	0.867
KOXV	0.867
KCAV	0.861
KMCW	0.860
KCNC	0.846
KPEA	0.844
KFFL	0.838

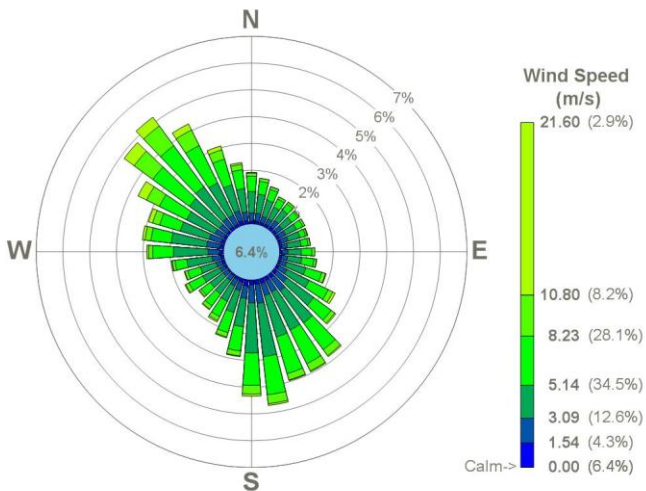
ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	98.6%	98.6%	2.1%	97.7%	97.8%	97.2%	97.8%	5.7%
	Q2	99.8%	99.8%	1.3%	99.7%	99.8%	98.2%	99.8%	3.0%
	Q3	98.9%	98.9%	1.5%	98.5%	98.6%	96.3%	98.5%	8.7%
	Q4	97.5%	97.5%	1.2%	96.8%	96.9%	96.6%	96.9%	5.5%
2006	Q1	96.4%	96.4%	2.2%	96.3%	96.3%	95.9%	96.3%	2.6%
	Q2	99.0%	99.0%	0.6%	98.9%	99.0%	97.8%	98.9%	6.4%
	Q3	99.5%	99.5%	1.4%	99.3%	99.4%	97.1%	98.2%	9.5%
	Q4	98.3%	98.3%	0.6%	98.3%	98.3%	98.1%	98.3%	4.6%
2007	Q1	92.4%	92.4%	2.2%	91.1%	92.4%	92.2%	92.3%	3.1%
	Q2	94.7%	94.7%	1.1%	94.6%	94.7%	94.0%	94.7%	4.5%
	Q3	95.3%	95.3%	1.0%	95.3%	95.3%	94.1%	95.3%	9.2%
	Q4	99.1%	99.1%	0.8%	99.1%	99.1%	98.7%	99.1%	4.5%
2008	Q1	96.7%	96.7%	2.4%	96.7%	95.3%	96.5%	96.7%	5.8%
	Q2	99.3%	99.3%	0.6%	96.7%	99.3%	98.0%	99.1%	4.7%
	Q3	98.1%	98.1%	0.3%	97.8%	98.1%	96.7%	98.1%	13.2%
	Q4	99.4%	99.4%	0.5%	99.3%	99.4%	98.9%	99.4%	5.6%
2009	Q1	98.9%	98.9%	0.3%	98.6%	98.8%	98.6%	98.8%	5.0%
	Q2	99.5%	99.5%	0.3%	99.4%	99.5%	98.1%	99.5%	7.0%
	Q3	99.5%	99.5%	0.5%	99.5%	99.5%	97.6%	99.5%	15.8%
	Q4	99.4%	99.4%	0.4%	99.1%	99.4%	99.1%	99.3%	4.9%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

(KMCW)

WBAN:	14940
WMO:	725485
Anemometer Height:	10.0
1-Min Availability Date:	3/9/2005
IFW Installation Date:	5/17/2007



Lat-Long: 43.1543 N, 93.3262 W
UTM (NAD83, Z15): 473478.59, 4778001.42
Elevation: 362.4 m
Confidence: High

A map of Iowa showing its 99 counties. A blue circle highlights a central cluster of counties: Winneshiek, Worth, Mitchell, Howard, Winnebago, Cerro Gordo, Floyd, Chickasaw, Hancock, Franklin, and Butler. A green line traces a path through the state, starting in the northwest, passing through Lyon, Dickinson, Emmet, Kossuth, Cherokee, Buena Vista, Pocahontas, Hamilton, Boone, Story, Marshall, Tama, Benson, Johnson, and ending in the southeast near Lee and Des Moines. The line also passes through a small green diamond marker located in Polk County.

Station	Correlation
KCAV	0.901
KCCY	0.895
KALO	0.880
KRST	0.880
KAXA	0.865
KMIJQ	0.863
KOLZ	0.860
KMIW	0.860
KEBS	0.850
KEST	0.846
KSPW	0.841
KSLB	0.841
KBNW	0.831
KAUM	0.828
KCIN	0.822
KAMW	0.812
KFKA	0.807
KDSM	0.805
KSHL	0.798
KCID	0.797

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	0.9%	93.9%	99.6%	95.2%	95.6%	3.4%
	Q2	98.6%	98.6%	1.7%	97.6%	98.1%	97.2%	98.5%	3.2%
	Q3	100.0%	100.0%	0.5%	97.7%	99.8%	97.9%	99.6%	10.2%
	Q4	100.0%	100.0%	0.1%	97.2%	100.0%	99.2%	99.8%	6.6%
2006	Q1	96.3%	96.3%	1.9%	96.3%	96.3%	94.8%	95.0%	1.8%
	Q2	98.0%	98.0%	1.2%	97.9%	98.0%	96.6%	97.9%	4.9%
	Q3	99.0%	99.0%	1.2%	98.9%	99.0%	97.1%	99.0%	7.5%
	Q4	98.2%	98.2%	0.9%	98.0%	98.2%	97.4%	98.1%	3.2%
2007	Q1	97.1%	97.1%	2.1%	97.0%	97.0%	96.7%	97.0%	3.1%
	Q2	97.3%	97.3%	1.4%	96.9%	97.1%	95.7%	96.9%	4.4%
	Q3	96.0%	96.0%	1.3%	96.0%	96.0%	94.5%	96.0%	9.7%
	Q4	98.9%	98.9%	1.1%	98.6%	98.9%	97.1%	97.2%	4.2%
2008	Q1	96.2%	96.2%	0.8%	95.8%	95.9%	92.0%	92.1%	6.1%
	Q2	99.3%	99.3%	0.7%	99.2%	99.3%	98.0%	99.2%	6.5%
	Q3	99.2%	99.2%	0.8%	99.1%	99.2%	98.0%	99.1%	11.6%
	Q4	99.9%	99.9%	1.0%	99.6%	99.7%	99.3%	99.7%	5.4%
2009	Q1	98.7%	98.7%	2.6%	98.6%	97.8%	98.0%	98.1%	4.8%
	Q2	99.5%	99.5%	0.5%	99.3%	99.5%	98.1%	99.2%	7.3%
	Q3	99.4%	99.4%	1.0%	99.3%	99.4%	97.2%	99.0%	18.7%
	Q4	99.4%	99.4%	1.4%	99.1%	99.3%	98.7%	98.8%	4.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Millard, NE

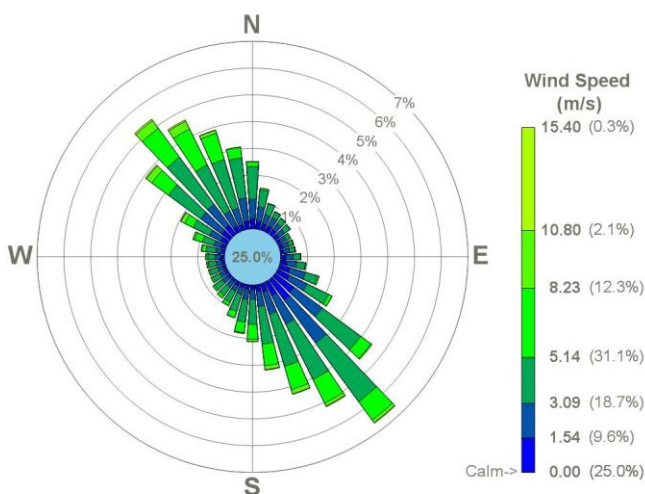
(KMLE)

Station Info

WBAN: 04992
WMO: 720308
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.1981 N, 96.1130 W
UTM (NAD83, Z15): 238960.20, 4565421.80
Elevation: 317.6 m
Confidence: High



Wind Correlation



Station	Correlation
KTQE	0.846
KOFF	0.813
KCBF	0.800
KOMA	0.784
KSDA	0.760
KAMW	0.754
KEBS	0.726
KIKV	0.709
KSUX	0.701
KDSM	0.696
KORC	0.695
KPEA	0.691
KHNR	0.685
KAXA	0.683
KBNW	0.680
KOXV	0.679
KRDK	0.670
KCAV	0.667
KSTJ	0.663
KCNC	0.662

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.7%	99.7%	99.7%	99.7%	99.5%	99.7%	99.7%	24.8%
	Q2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	17.3%
	Q3	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	98.3%	24.7%
	Q4	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	23.8%
2006	Q1	99.4%	99.4%	99.3%	99.4%	99.4%	99.4%	99.4%	17.5%
	Q2	99.0%	99.0%	98.9%	99.0%	98.8%	99.0%	99.0%	20.5%
	Q3	99.1%	99.1%	98.4%	98.0%	96.1%	98.4%	98.4%	27.0%
	Q4	99.1%	99.1%	99.1%	99.1%	99.1%	99.1%	99.1%	26.6%
2007	Q1	97.3%	97.3%	96.9%	96.9%	96.9%	96.9%	96.9%	17.0%
	Q2	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	19.0%
	Q3	97.9%	97.9%	97.9%	97.9%	97.9%	97.9%	97.9%	23.6%
	Q4	99.4%	99.4%	99.4%	99.3%	99.3%	99.4%	99.4%	31.0%
2008	Q1	98.4%	98.4%	98.3%	98.3%	98.3%	98.3%	98.3%	33.8%
	Q2	99.5%	99.5%	99.5%	99.4%	99.5%	99.5%	99.5%	24.5%
	Q3	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	31.6%
	Q4	100.0%	100.0%	100.0%	100.0%	99.9%	100.0%	100.0%	25.3%
2009	Q1	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	98.8%	22.6%
	Q2	99.7%	99.7%	99.6%	99.6%	99.6%	99.7%	99.7%	25.5%
	Q3	99.8%	99.8%	98.2%	97.8%	98.2%	99.2%	99.2%	37.6%
	Q4	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	25.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Moline, IL

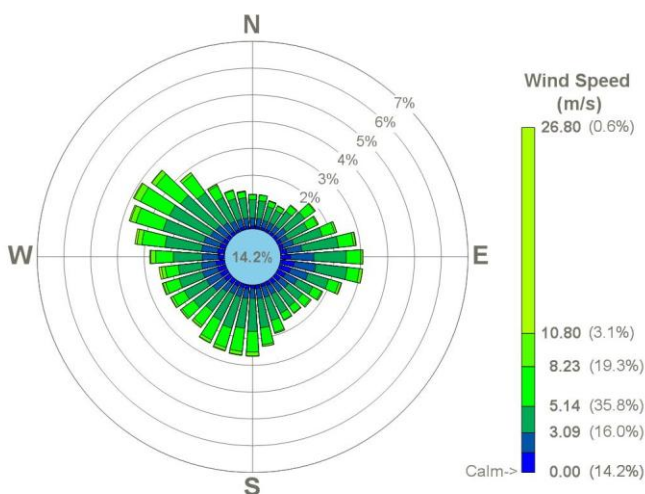
(KMLI)

Station Info

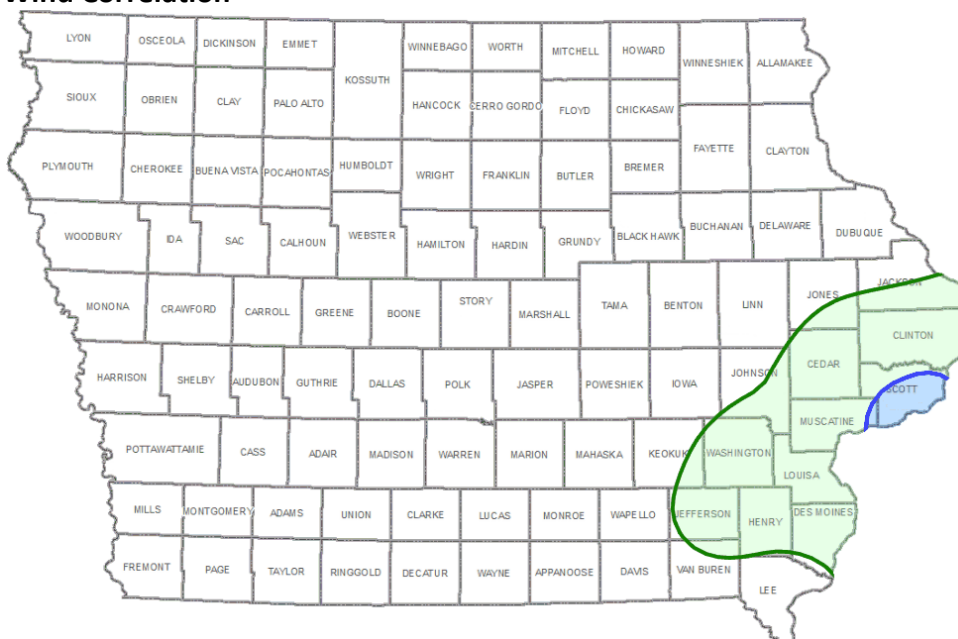
WBAN: 14923
WMO: 725440
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 4/16/2007

Location Info

Lat-Long: 41.4514 N, 90.5147 W
UTM (NAD83, Z15): 707593.19, 4591850.20
Elevation: 179.8 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KDVN	0.919
KCWI	0.870
KFEP	0.851
KMUT	0.850
KAWG	0.843
KGBG	0.833
KSFY	0.825
KMQB	0.825
KFFL	0.818
KMPZ	0.811
KBRL	0.805
KIOW	0.803
KEOK	0.780
KMXO	0.779
KFSW	0.776
KOTM	0.775
KCID	0.772
KOOA	0.755
KIIB	0.746
KIRK	0.745

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.9%	99.9%	88.0%	98.5%	99.9%	97.5%	99.6%	10.1%
	Q2	98.3%	98.3%	67.3%	93.8%	98.2%	93.9%	98.2%	11.2%
	Q3	99.9%	99.9%	82.4%	98.6%	99.8%	95.0%	99.8%	18.4%
	Q4	100.0%	100.0%	70.5%	98.2%	100.0%	98.5%	100.0%	11.1%
2006	Q1	98.4%	98.4%	65.3%	98.2%	98.4%	97.2%	98.3%	8.6%
	Q2	99.1%	99.1%	17.6%	99.0%	99.1%	96.5%	99.1%	12.7%
	Q3	99.6%	99.6%	18.5%	99.2%	99.3%	96.3%	99.3%	15.7%
	Q4	98.3%	98.3%	18.2%	97.4%	98.3%	96.7%	98.3%	10.2%
2007	Q1	97.2%	97.2%	18.5%	96.8%	96.9%	96.0%	96.9%	6.3%
	Q2	98.4%	98.4%	17.6%	98.4%	98.4%	95.4%	97.8%	14.8%
	Q3	97.5%	97.5%	16.9%	97.1%	97.3%	94.7%	97.0%	22.3%
	Q4	98.3%	98.3%	18.7%	97.1%	97.3%	96.9%	97.3%	13.5%
2008	Q1	96.7%	96.7%	18.2%	96.4%	96.5%	95.7%	96.3%	11.2%
	Q2	97.3%	97.3%	17.9%	97.1%	97.3%	94.7%	96.5%	13.6%
	Q3	94.4%	94.4%	18.6%	94.1%	93.9%	92.3%	93.9%	23.7%
	Q4	99.2%	99.1%	19.5%	98.6%	98.7%	96.6%	97.6%	11.8%
2009	Q1	97.8%	97.8%	19.5%	97.0%	97.4%	96.1%	96.8%	9.3%
	Q2	98.6%	98.5%	17.7%	98.2%	98.6%	97.1%	98.5%	17.4%
	Q3	99.5%	99.5%	18.6%	99.4%	99.5%	97.5%	99.5%	27.6%
	Q4	99.1%	99.1%	19.2%	98.8%	99.1%	98.2%	99.0%	13.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Monticello, IA

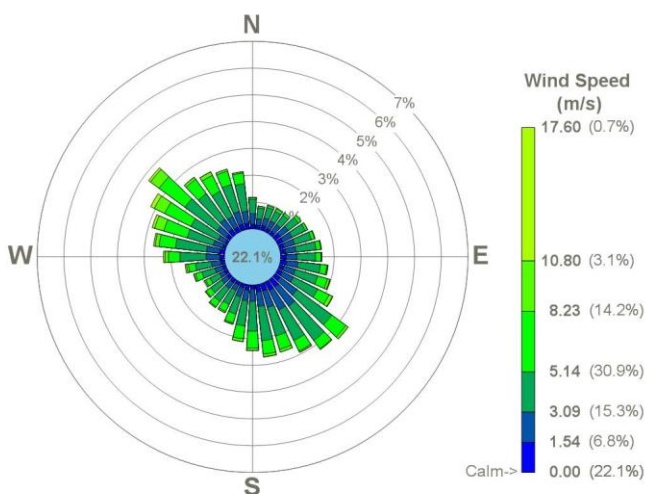
(KMXO)

Station Info

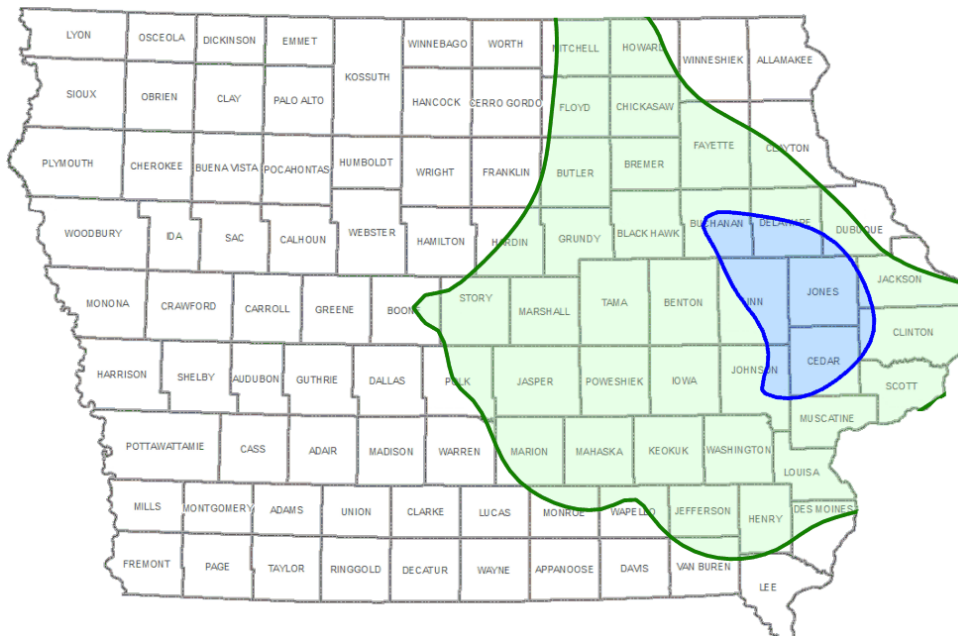
WBAN: NA
WMO: 725475
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.2204 N, 91.1605 W
UTM (NAD83, Z15): 651818.76, 4675885.44
Elevation: 253.9 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KIOW	0.904
KIIB	0.902
KOLZ	0.884
KVTI	0.872
KMUT	0.870
KOOA	0.865
KCID	0.860
KAWG	0.852
KCWI	0.845
KCCY	0.844
KDVN	0.841
KFFL	0.838
KPEA	0.835
KMIW	0.826
KMPZ	0.825
KALO	0.824
KTNU	0.822
KOXV	0.818
KSFY	0.813
KBNW	0.806

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	94.5%	94.5%	94.4%	94.4%	94.5%	94.5%	94.5%	16.7%
	Q2	95.0%	95.0%	95.0%	94.9%	95.0%	95.0%	95.0%	17.4%
	Q3	96.3%	96.3%	96.2%	96.2%	96.3%	96.3%	96.3%	32.8%
	Q4	92.5%	92.5%	92.5%	92.4%	92.5%	92.5%	92.5%	21.0%
2006	Q1	96.0%	96.0%	96.0%	96.0%	95.9%	96.0%	96.0%	14.2%
	Q2	91.3%	91.3%	91.2%	91.3%	91.3%	91.3%	91.3%	20.2%
	Q3	93.9%	93.9%	93.9%	93.8%	93.9%	93.9%	93.9%	32.1%
	Q4	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	18.4%
2007	Q1	89.7%	89.7%	89.7%	89.6%	89.7%	89.7%	89.7%	13.4%
	Q2	94.3%	94.3%	94.3%	94.0%	94.3%	94.3%	94.3%	19.6%
	Q3	89.8%	89.8%	89.7%	89.4%	89.7%	89.7%	89.7%	31.6%
	Q4	92.8%	92.8%	92.8%	92.6%	92.8%	92.8%	92.8%	18.3%
2008	Q1	95.1%	95.1%	95.1%	94.9%	95.1%	95.1%	95.1%	19.3%
	Q2	95.5%	95.5%	95.4%	95.2%	95.5%	95.5%	95.5%	17.7%
	Q3	95.0%	95.0%	95.0%	94.9%	95.0%	95.0%	95.0%	37.0%
	Q4	93.5%	93.5%	93.5%	93.4%	93.5%	93.5%	93.5%	20.0%
2009	Q1	96.9%	96.9%	96.9%	96.8%	96.7%	96.7%	96.7%	17.6%
	Q2	87.1%	87.1%	87.0%	86.9%	87.1%	87.1%	87.1%	20.6%
	Q3	84.5%	84.5%	84.4%	79.7%	84.5%	84.5%	84.5%	34.9%
	Q4	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	19.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Mount Pleasant, IA

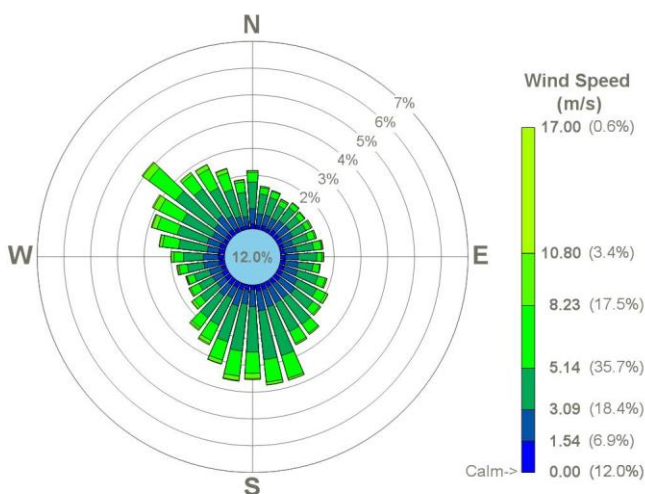
(KMPZ)

Station Info

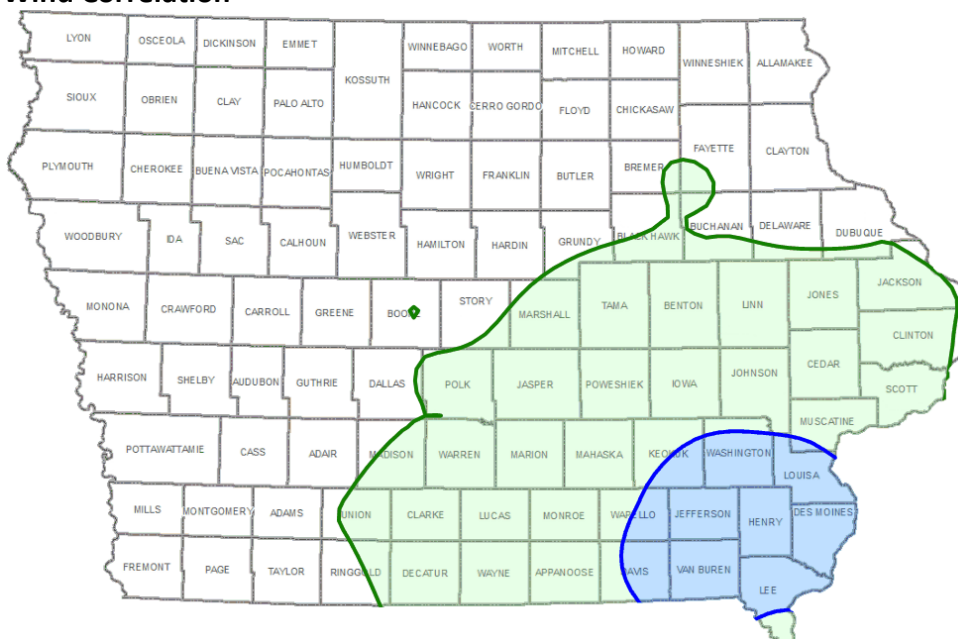
WBAN: NA
WMO: 720309
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.9452 N, 91.5122 W
UTM (NAD83, Z15): 625231.85, 4533739.44
Elevation: 221.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KFFL	0.941
KAWG	0.937
KFSW	0.936
KBRL	0.924
KMQB	0.901
KOTM	0.895
KMUT	0.894
KUIN	0.888
KOOA	0.885
KCNC	0.874
KEOK	0.871
KOXV	0.870
KIRK	0.867
KDVN	0.866
KGBG	0.864
KTNU	0.856
KCID	0.854
KIOW	0.852
KVTI	0.839
KIKV	0.837

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	93.0%	93.0%	91.8%	91.8%	91.8%	91.8%	91.8%	10.1%
	Q2	96.1%	96.1%	96.0%	95.9%	96.0%	96.0%	96.0%	6.6%
	Q3	93.3%	93.3%	93.1%	92.8%	93.1%	93.1%	93.1%	11.4%
	Q4	92.9%	92.9%	92.0%	91.9%	92.0%	92.0%	92.0%	17.2%
2006	Q1	96.6%	96.6%	95.8%	95.9%	95.9%	95.9%	95.9%	16.3%
	Q2	93.9%	93.9%	93.8%	93.8%	93.9%	93.9%	93.9%	30.2%
	Q3	97.8%	97.8%	97.3%	97.0%	97.3%	97.3%	97.3%	42.4%
	Q4	94.4%	94.4%	93.1%	93.1%	93.2%	93.1%	93.1%	4.4%
2007	Q1	88.4%	88.4%	88.0%	87.9%	88.0%	88.0%	88.0%	4.4%
	Q2	95.5%	95.5%	95.2%	95.0%	95.2%	95.2%	95.2%	8.2%
	Q3	90.5%	90.5%	90.4%	90.1%	90.4%	90.4%	90.4%	10.1%
	Q4	92.8%	92.8%	91.9%	91.8%	91.9%	91.9%	91.9%	7.2%
2008	Q1	96.4%	96.4%	95.7%	95.3%	95.7%	95.9%	95.9%	4.5%
	Q2	93.5%	93.5%	93.5%	93.5%	92.0%	93.5%	93.5%	6.3%
	Q3	97.6%	97.6%	97.3%	96.7%	97.3%	97.5%	97.5%	16.9%
	Q4	94.9%	94.9%	93.8%	93.8%	93.8%	94.1%	94.1%	7.3%
2009	Q1	97.2%	97.2%	96.9%	96.8%	96.9%	96.9%	96.9%	5.6%
	Q2	97.2%	97.2%	97.0%	96.9%	97.0%	97.1%	97.1%	8.0%
	Q3	97.6%	97.6%	97.5%	97.4%	97.5%	97.5%	97.5%	15.5%
	Q4	98.4%	98.4%	97.8%	97.8%	97.8%	97.9%	97.9%	7.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Muscatine, IA

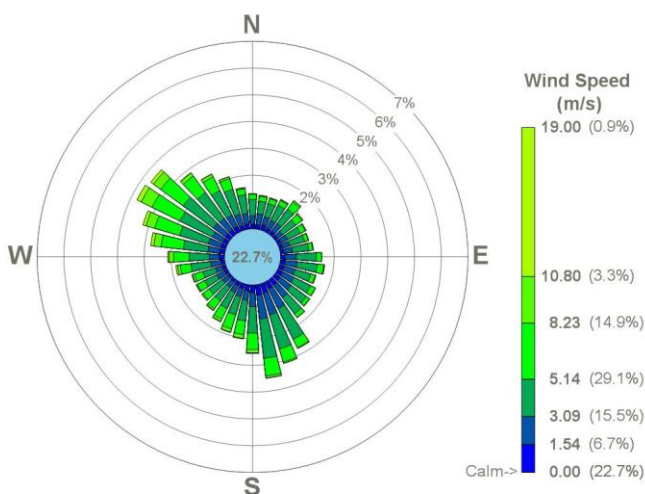
(KMUT)

Station Info

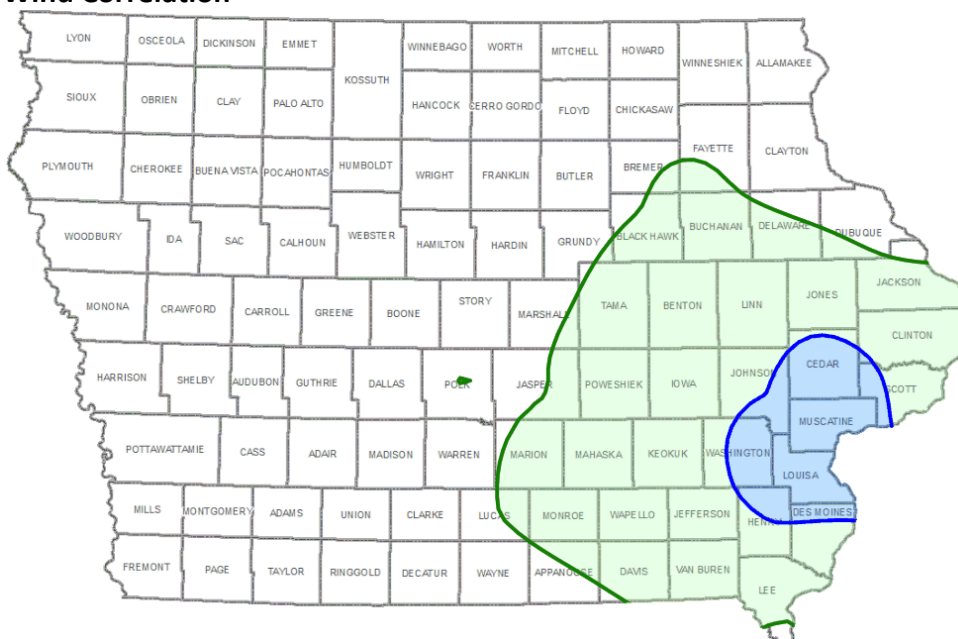
WBAN: NA
WMO: 725487
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.3670 N, 91.1406 W
UTM (NAD83, Z15): 655511.28, 4581166.81
Elevation: 165.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KAWG	0.910
KGBG	0.901
KIOW	0.897
KMPZ	0.894
KFFL	0.878
KDVN	0.877
KMQB	0.876
KCID	0.876
KMXO	0.870
KOOA	0.866
KVTI	0.859
KCWI	0.852
KMLI	0.850
KSFY	0.845
KFSW	0.842
KBRL	0.834
KOTM	0.828
KOLZ	0.821
KOXV	0.816
KIIB	0.811

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	93.7%	93.7%	93.7%	93.7%	93.7%	93.7%	93.7%	19.6%
	Q2	90.7%	90.7%	90.7%	90.5%	90.7%	90.7%	90.7%	19.3%
	Q3	91.3%	91.3%	91.3%	91.0%	91.3%	91.3%	91.3%	32.8%
	Q4	90.7%	90.7%	90.7%	90.3%	90.4%	90.4%	90.4%	19.3%
2006	Q1	94.8%	94.8%	94.8%	94.6%	94.8%	94.8%	94.8%	13.6%
	Q2	90.6%	90.6%	90.6%	90.2%	90.6%	90.6%	90.6%	21.3%
	Q3	95.4%	95.4%	95.4%	95.3%	95.4%	95.4%	95.4%	29.9%
	Q4	90.6%	90.6%	90.6%	90.5%	90.6%	90.6%	90.6%	21.2%
2007	Q1	94.2%	94.2%	94.2%	94.2%	94.2%	94.2%	94.2%	13.1%
	Q2	85.6%	85.6%	85.6%	85.5%	85.6%	85.6%	85.6%	22.1%
	Q3	91.6%	91.6%	91.6%	91.5%	91.2%	91.2%	91.2%	33.6%
	Q4	91.0%	91.0%	91.0%	90.9%	91.0%	91.0%	91.0%	23.3%
2008	Q1	95.3%	95.3%	95.3%	94.7%	95.3%	95.3%	95.3%	22.3%
	Q2	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	17.7%
	Q3	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	35.4%
	Q4	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	20.5%
2009	Q1	97.3%	97.3%	97.3%	97.2%	97.3%	97.3%	97.3%	14.7%
	Q2	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	21.1%
	Q3	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	36.2%
	Q4	88.2%	88.2%	88.2%	88.0%	88.2%	88.2%	88.2%	16.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Nebraska City, NE

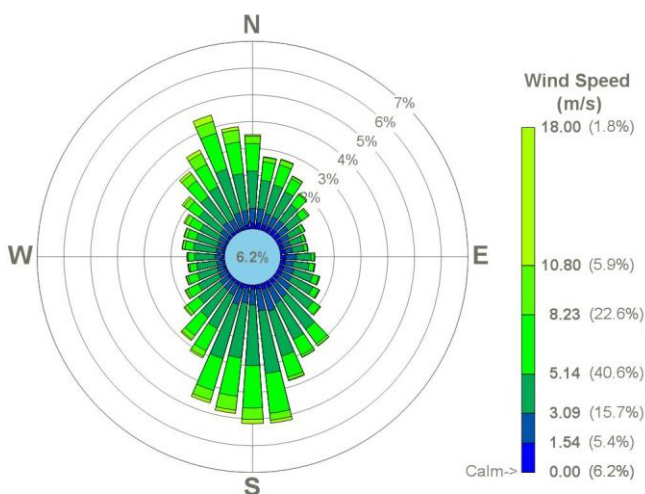
(KAFK)

Station Info

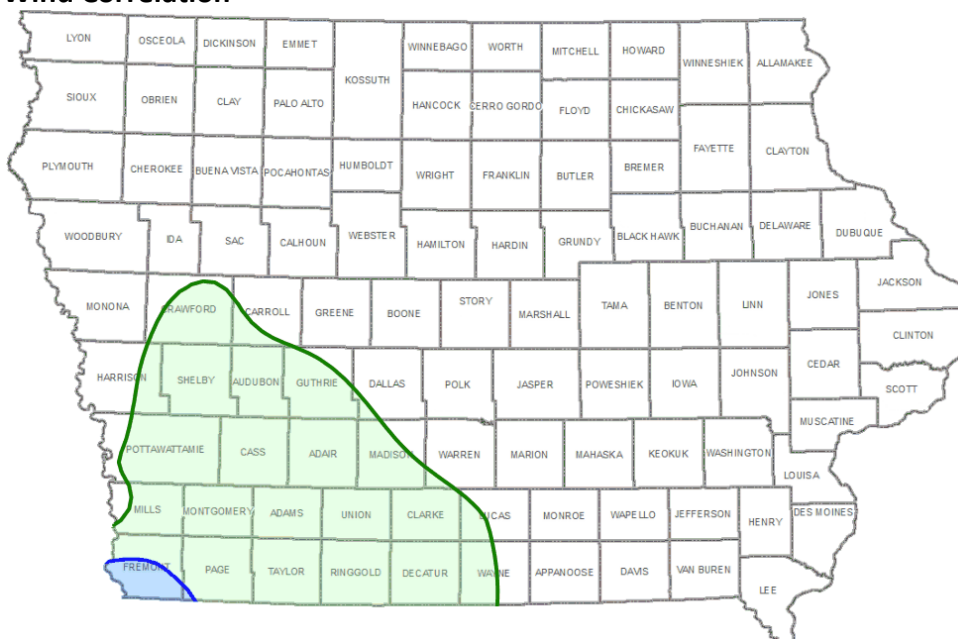
WBAN: 04993
WMO: 725541
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.6065 N, 95.8635 W
UTM (NAD83, Z15): 257733.12, 4499018.38
Elevation: 352.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KRDK	0.896
KSDA	0.887
KCBF	0.865
KICL	0.861
KCSQ	0.859
KAIO	0.856
KLWD	0.855
KSTJ	0.853
KADU	0.839
KHNR	0.838
KDNS	0.826
KCNC	0.797
KFOD	0.791
KSLB	0.782
KLRJ	0.776
KCIN	0.771
KIKV	0.762
KSHL	0.760
KAXA	0.757
KTQE	0.755

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	94.4%	94.4%	94.3%	94.2%	93.7%	94.3%	94.3%	6.9%
	Q2	100.0%	100.0%	98.9%	99.9%	97.4%	99.9%	99.9%	3.3%
	Q3	99.5%	99.5%	99.4%	99.3%	99.4%	99.4%	99.4%	8.9%
	Q4	99.3%	99.3%	99.3%	99.2%	99.3%	99.3%	99.3%	4.0%
2006	Q1	99.4%	99.4%	99.4%	99.3%	99.0%	99.4%	99.4%	3.6%
	Q2	99.0%	99.0%	99.0%	98.9%	99.0%	99.0%	99.0%	5.4%
	Q3	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	8.3%
	Q4	98.3%	98.3%	98.1%	98.1%	98.2%	98.1%	98.1%	4.1%
2007	Q1	97.0%	97.0%	94.6%	94.6%	94.2%	94.6%	94.6%	3.6%
	Q2	97.6%	97.6%	97.5%	97.3%	97.5%	97.5%	97.5%	5.0%
	Q3	93.4%	93.4%	93.4%	93.4%	93.4%	93.4%	93.4%	7.9%
	Q4	98.0%	98.0%	97.7%	97.5%	95.6%	97.7%	97.7%	5.7%
2008	Q1	96.9%	96.9%	96.9%	96.8%	96.7%	96.9%	96.9%	5.4%
	Q2	99.2%	99.2%	99.2%	99.1%	99.2%	99.2%	99.2%	7.0%
	Q3	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	11.1%
	Q4	100.0%	100.0%	100.0%	99.9%	100.0%	100.0%	100.0%	5.8%
2009	Q1	98.8%	98.8%	98.8%	98.8%	95.4%	98.8%	98.8%	3.4%
	Q2	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	6.2%
	Q3	99.7%	99.7%	99.7%	99.7%	98.5%	99.7%	99.7%	14.5%
	Q4	99.6%	99.6%	99.1%	98.9%	98.4%	99.1%	99.1%	4.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Newton, IA

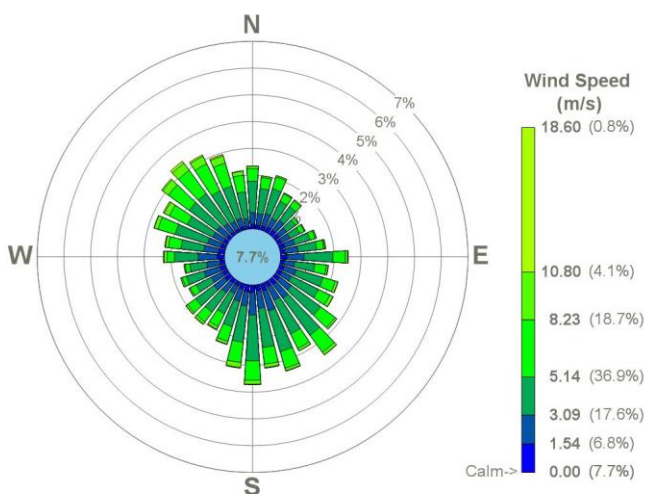
(KTNU)

Station Info

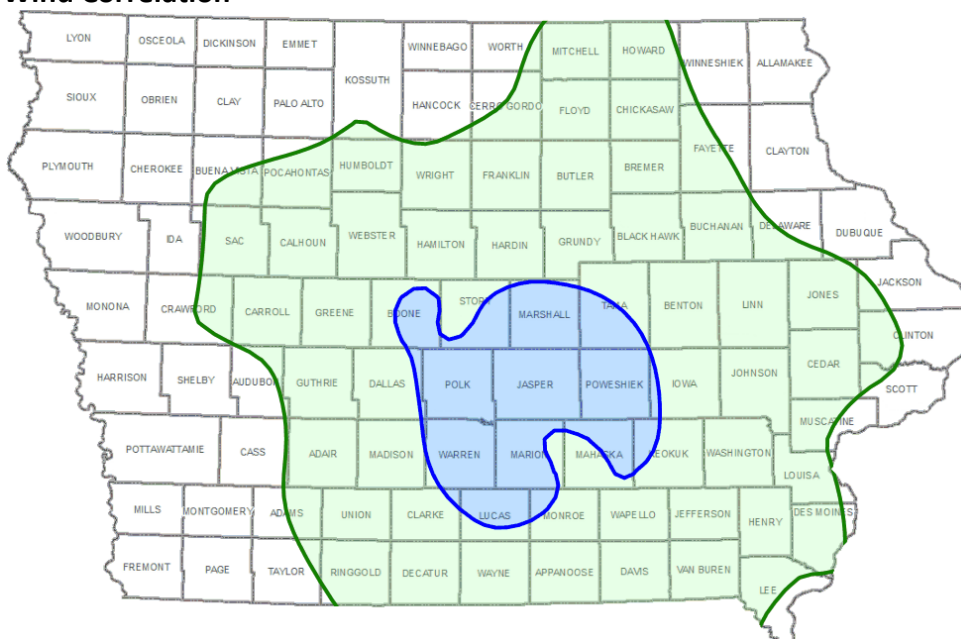
WBAN: NA
WMO: 725464
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.6701 N, 93.0191 W
UTM (NAD83, Z15): 498410.04, 4613149.04
Elevation: 286.8 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KOXX	0.930
KIKV	0.921
KBNW	0.919
KDSM	0.912
KMIW	0.909
KCNC	0.906
KOOA	0.902
KOTM	0.887
KAMW	0.885
KFFL	0.885
KAWG	0.877
KPEA	0.875
KCCY	0.872
KEBS	0.864
KOLZ	0.861
KVTI	0.860
KCSQ	0.856
KMPZ	0.856
KCID	0.848
KIIB	0.845

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	7.0%
	Q2	91.8%	91.8%	91.4%	87.8%	91.4%	91.4%	91.4%	4.9%
	Q3	90.7%	90.7%	90.1%	90.1%	90.2%	90.2%	90.2%	11.3%
	Q4	84.6%	84.6%	84.6%	84.4%	84.6%	84.6%	84.6%	6.9%
2006	Q1	94.2%	94.2%	94.2%	94.2%	94.2%	94.2%	94.2%	4.4%
	Q2	96.9%	96.9%	96.9%	96.8%	96.9%	96.9%	96.9%	6.3%
	Q3	98.0%	98.0%	97.9%	97.2%	98.0%	98.0%	98.0%	10.2%
	Q4	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	4.4%
2007	Q1	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	7.5%
	Q2	92.9%	92.9%	92.8%	92.5%	92.9%	92.9%	92.9%	6.2%
	Q3	92.0%	92.0%	91.6%	91.3%	91.7%	91.7%	91.7%	10.3%
	Q4	94.8%	94.8%	94.8%	93.3%	94.8%	94.8%	94.8%	7.9%
2008	Q1	94.5%	94.5%	94.5%	94.1%	94.5%	94.5%	94.5%	7.1%
	Q2	94.5%	94.5%	94.4%	94.4%	94.5%	94.5%	94.5%	5.5%
	Q3	82.4%	82.4%	82.3%	82.4%	82.4%	82.4%	82.4%	12.3%
	Q4	97.6%	97.6%	97.6%	97.4%	97.6%	97.6%	97.6%	6.9%
2009	Q1	94.8%	94.8%	94.8%	94.6%	94.8%	94.8%	94.8%	5.2%
	Q2	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	7.8%
	Q3	93.6%	93.6%	93.6%	93.6%	93.6%	93.6%	93.6%	15.3%
	Q4	97.1%	97.1%	96.9%	96.9%	96.9%	96.9%	96.9%	6.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Oelwein, IA

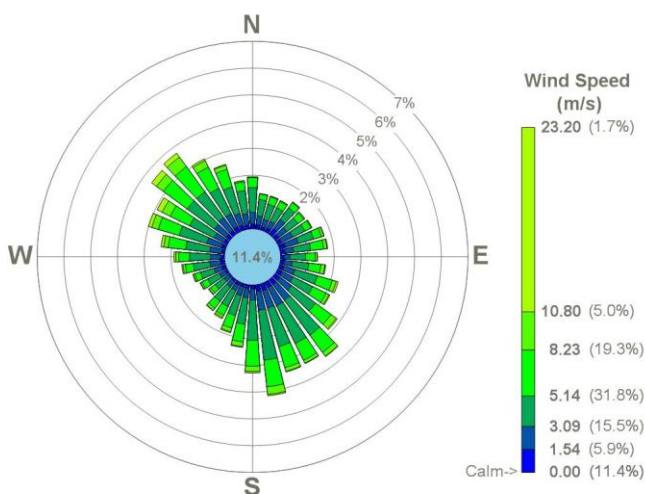
(KOLZ)

Station Info

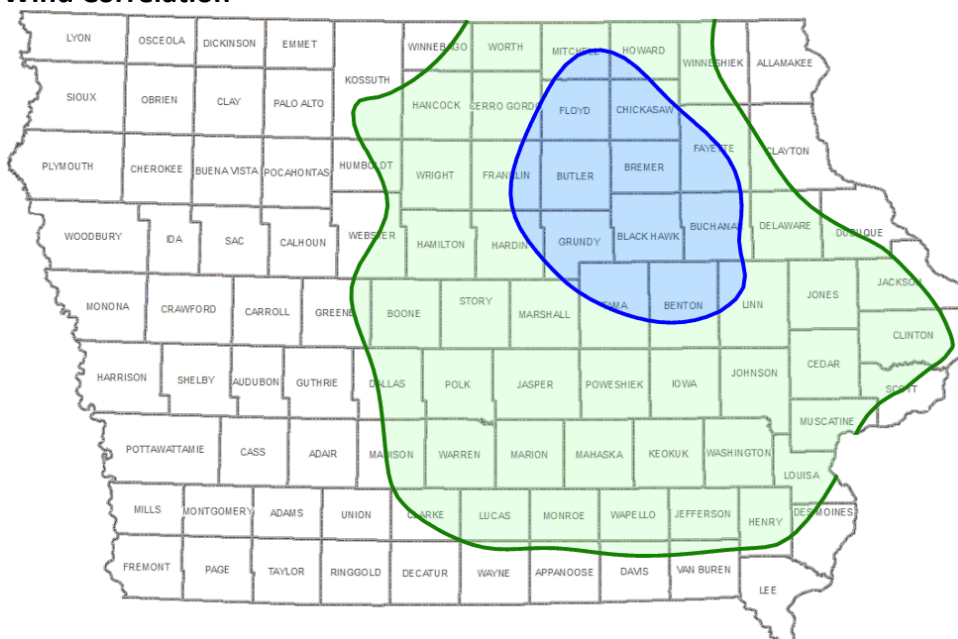
WBAN: NA
WMO: 725488
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.6832 N, 91.9762 W
UTM (NAD83, Z15): 583876.05, 4726143.74
Elevation: 328.6 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KCCY	0.938
KALO	0.926
KVTI	0.914
KIIB	0.910
KMIW	0.894
KCID	0.886
KMXO	0.884
KAUM	0.868
KCAV	0.862
KTNU	0.861
KMCW	0.860
KEBS	0.860
KOOA	0.855
KFKA	0.849
KBNW	0.848
KDSM	0.845
KAWG	0.842
KOTM	0.840
KIKV	0.839
KIOW	0.839

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	97.8%	97.8%	89.2%	88.0%	89.1%	89.2%	89.2%	5.9%
	Q2	94.6%	94.6%	57.9%	54.4%	57.9%	57.9%	57.9%	2.7%
	Q3	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	13.9%
	Q4	90.2%	90.2%	90.1%	90.0%	90.2%	90.2%	90.2%	7.2%
2006	Q1	97.6%	97.6%	97.6%	97.5%	94.5%	97.6%	97.6%	3.6%
	Q2	93.0%	93.0%	93.0%	92.8%	93.0%	93.0%	93.0%	6.6%
	Q3	89.4%	89.4%	89.4%	89.3%	89.4%	89.4%	89.4%	13.5%
	Q4	86.7%	86.7%	86.4%	86.7%	86.7%	86.7%	86.7%	22.9%
2007	Q1	91.7%	91.7%	85.6%	91.6%	91.7%	91.7%	91.7%	33.1%
	Q2	92.3%	92.3%	92.3%	92.2%	92.3%	92.3%	92.3%	30.3%
	Q3	89.2%	89.2%	89.2%	89.1%	89.2%	89.2%	89.2%	13.5%
	Q4	88.9%	88.9%	88.6%	88.2%	88.6%	88.6%	88.6%	6.1%
2008	Q1	95.4%	95.4%	93.2%	92.4%	93.2%	93.2%	93.2%	7.2%
	Q2	94.0%	94.0%	93.9%	93.9%	94.0%	94.0%	94.0%	4.1%
	Q3	96.4%	96.4%	96.4%	93.7%	96.4%	96.4%	96.4%	11.5%
	Q4	93.0%	93.0%	91.9%	91.9%	92.0%	92.0%	92.0%	5.8%
2009	Q1	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	5.6%
	Q2	93.2%	93.2%	93.2%	93.2%	93.2%	93.2%	93.2%	7.5%
	Q3	88.8%	88.8%	88.8%	83.6%	88.8%	88.8%	88.8%	19.7%
	Q4	98.4%	98.4%	98.3%	98.2%	98.4%	98.4%	98.4%	7.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Offutt, NE

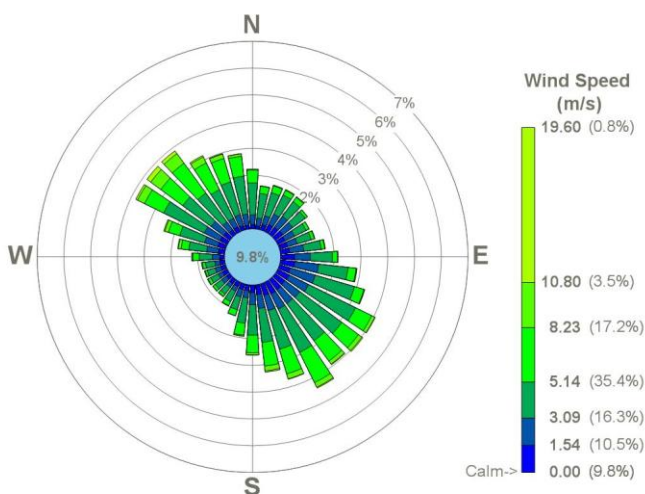
(KOFF)

Station Info

WBAN: 14949
WMO: 725540
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.1149 N, 95.8985 W
UTM (NAD83, Z15): 256641.31, 4555561.76
Elevation: 294.1 m
Confidence: High



Wind Correlation



Station	Correlation
KCBF	0.829
KSUX	0.827
KSDA	0.816
KMLE	0.813
KTQE	0.799
KDSM	0.791
KAMW	0.777
KIKV	0.761
KBNW	0.759
KPEA	0.759
KDNS	0.759
KMIW	0.754
KTNU	0.752
KYKN	0.751
KEBS	0.749
KHNR	0.749
KCSQ	0.740
KRDK	0.737
KOMA	0.736
KORC	0.735

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.1%	99.1%	1.0%	98.6%	98.4%	95.0%	98.7%	6.3%
	Q2	97.4%	97.4%	0.8%	97.1%	96.9%	94.0%	97.1%	3.2%
	Q3	98.7%	98.7%	0.5%	98.7%	98.7%	93.0%	98.7%	4.3%
	Q4	97.9%	97.9%	0.5%	97.6%	97.6%	95.7%	97.7%	5.6%
2006	Q1	98.3%	98.3%	0.4%	98.2%	98.1%	96.9%	98.3%	3.1%
	Q2	80.8%	80.8%	3.5%	80.3%	80.2%	76.7%	80.4%	2.8%
	Q3	70.0%	70.0%	5.8%	69.8%	69.5%	68.6%	69.9%	5.7%
	Q4	97.7%	97.7%	1.9%	97.7%	97.6%	96.5%	97.7%	12.0%
2007	Q1	97.2%	97.2%	1.1%	97.1%	97.0%	95.6%	97.2%	7.8%
	Q2	97.7%	97.7%	0.5%	97.6%	97.3%	95.3%	97.6%	9.8%
	Q3	96.6%	96.6%	0.9%	96.6%	96.5%	92.9%	96.6%	8.9%
	Q4	98.9%	98.9%	0.2%	98.9%	98.8%	97.6%	98.8%	15.2%
2008	Q1	96.0%	96.0%	0.8%	95.7%	95.6%	94.6%	95.9%	13.3%
	Q2	98.8%	98.2%	0.7%	98.7%	98.7%	96.2%	98.6%	12.3%
	Q3	98.2%	98.2%	3.8%	98.0%	97.6%	95.2%	98.1%	14.4%
	Q4	99.3%	99.3%	0.0%	99.2%	99.2%	98.0%	99.2%	14.2%
2009	Q1	98.2%	98.2%	2.8%	98.0%	98.1%	97.0%	98.1%	9.9%
	Q2	99.2%	99.2%	0.0%	99.2%	99.2%	96.2%	99.2%	11.5%
	Q3	98.6%	98.6%	2.1%	98.6%	98.6%	95.1%	98.6%	18.6%
	Q4	98.9%	98.9%	6.5%	98.6%	98.9%	98.0%	98.9%	12.4%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Omaha, NE

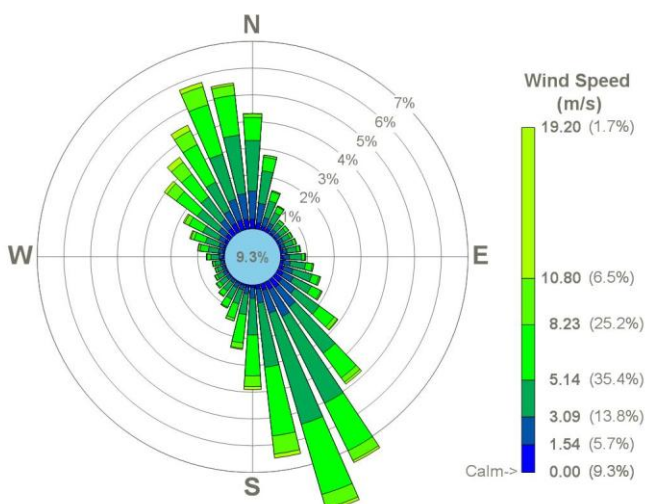
(KOMA)

Station Info

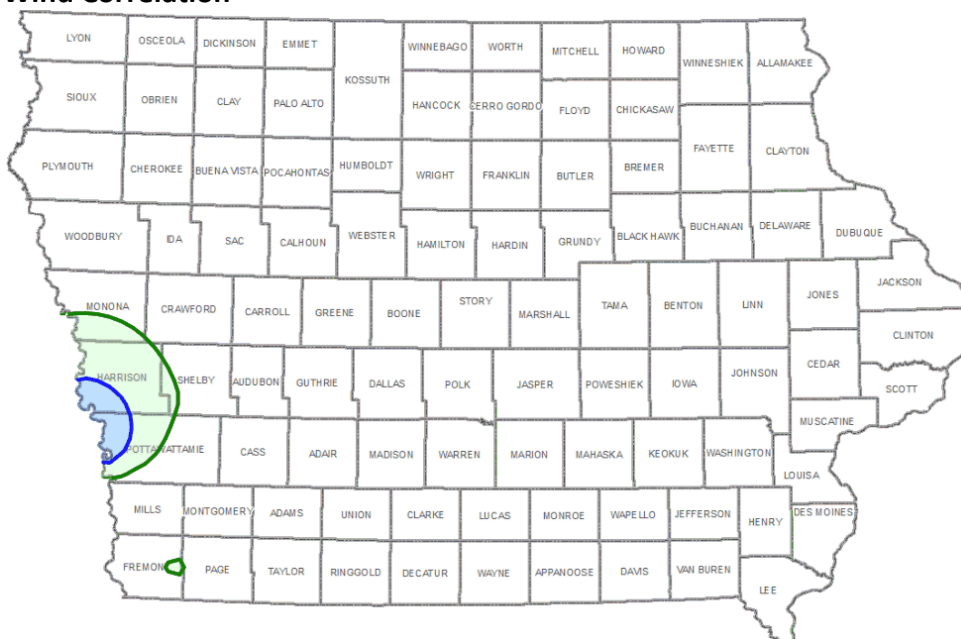
WBAN: 14942
WMO: 725500
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 9/13/2006

Location Info

Lat-Long: 41.3119 N, 95.9018 W
UTM (NAD83, Z15): 257094.73, 4577444.41
Elevation: 298.7 m
Confidence: High



Wind Correlation



Station	Correlation
KTQE	0.885
KCBF	0.824
KSDA	0.820
KMLE	0.784
KHNR	0.775
KEBS	0.758
KAXA	0.742
KOFF	0.736
KSTJ	0.731
KSPW	0.728
KDNS	0.725
KAMW	0.714
KAFK	0.713
KCAV	0.713
KSHL	0.710
KDSM	0.709
KCSQ	0.701
KRDK	0.700
KLYV	0.692
KORC	0.679

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	89.8%	99.0%	100.0%	98.1%	100.0%	7.5%
	Q2	100.0%	100.0%	70.5%	99.3%	100.0%	98.5%	100.0%	5.1%
	Q3	100.0%	100.0%	82.9%	99.3%	100.0%	97.3%	100.0%	7.5%
	Q4	100.0%	100.0%	71.2%	99.0%	100.0%	98.7%	100.0%	6.3%
2006	Q1	98.5%	98.5%	65.2%	98.5%	98.5%	97.0%	98.5%	4.9%
	Q2	99.2%	99.2%	17.1%	99.2%	99.2%	97.1%	99.2%	7.9%
	Q3	99.8%	99.8%	16.9%	99.7%	99.8%	97.7%	99.8%	9.2%
	Q4	98.7%	98.7%	16.5%	98.7%	98.7%	98.3%	98.6%	11.0%
2007	Q1	97.9%	97.9%	16.1%	97.8%	97.9%	97.5%	97.9%	7.5%
	Q2	98.7%	98.7%	17.3%	98.7%	98.7%	97.3%	98.7%	8.9%
	Q3	97.5%	97.5%	17.0%	97.4%	97.5%	96.1%	97.5%	9.6%
	Q4	98.9%	98.9%	17.8%	98.8%	98.9%	98.2%	98.9%	11.0%
2008	Q1	96.5%	96.5%	16.7%	96.5%	96.5%	95.9%	96.5%	11.7%
	Q2	98.8%	98.8%	17.2%	98.8%	98.8%	96.5%	98.8%	12.0%
	Q3	98.1%	98.1%	17.1%	98.1%	98.1%	96.6%	98.1%	11.2%
	Q4	99.8%	99.8%	17.2%	99.7%	99.8%	99.4%	99.8%	10.3%
2009	Q1	98.9%	98.9%	17.5%	98.8%	98.9%	97.8%	98.9%	8.1%
	Q2	99.6%	99.6%	17.1%	99.6%	99.6%	97.7%	99.6%	11.3%
	Q3	99.8%	99.8%	17.0%	99.8%	99.8%	97.9%	99.8%	16.9%
	Q4	99.5%	99.5%	17.2%	99.3%	99.5%	99.0%	99.5%	8.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Orange City, IA

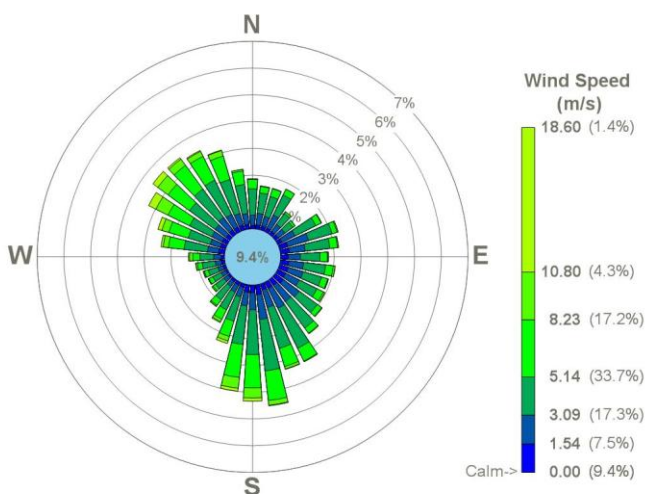
(KORC)

Station Info

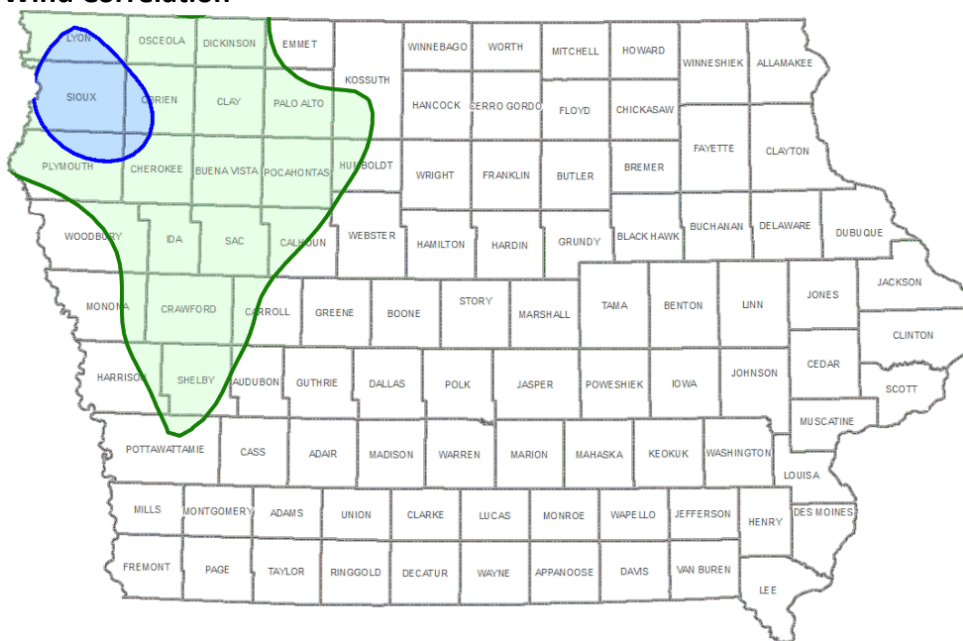
WBAN: NA
WMO: 725489
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.9895 N, 96.0606 W
UTM (NAD83, Z15): 250484.60, 4764195.20
Elevation: 432.8 m
Confidence: Medium



Wind Correlation



Station	Correlation
KSHL	0.898
KLRJ	0.896
KLYV	0.895
KDNS	0.849
KSLB	0.832
KHNR	0.826
KMJQ	0.822
KSPW	0.811
KAXA	0.810
KFSD	0.804
KCBF	0.800
KEBS	0.793
KDSM	0.793
KFOD	0.791
KEST	0.789
KYKN	0.789
KIKV	0.787
KCIN	0.785
KCSQ	0.783
KRDK	0.780

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	95.4%	95.4%	93.8%	95.2%	95.2%	95.2%	95.2%	8.5%
	Q2	93.1%	93.1%	93.1%	93.1%	93.1%	93.1%	93.1%	4.8%
	Q3	90.9%	90.9%	90.9%	90.9%	90.9%	90.9%	90.9%	12.0%
	Q4	90.1%	90.1%	90.0%	90.1%	90.1%	90.1%	90.1%	8.9%
2006	Q1	93.5%	93.5%	93.4%	93.4%	93.5%	93.5%	93.5%	5.1%
	Q2	79.9%	79.9%	79.9%	79.8%	79.9%	79.9%	79.9%	4.7%
	Q3	81.3%	81.3%	81.3%	81.0%	81.3%	81.3%	81.3%	9.6%
	Q4	82.4%	82.4%	82.2%	82.4%	82.4%	82.4%	82.4%	8.2%
2007	Q1	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	4.3%
	Q2	92.6%	92.6%	92.5%	92.6%	92.6%	92.6%	92.6%	7.1%
	Q3	90.3%	90.3%	90.3%	90.1%	90.3%	90.3%	90.3%	10.7%
	Q4	91.0%	91.0%	91.0%	89.1%	91.0%	91.0%	91.0%	11.3%
2008	Q1	95.3%	95.3%	94.6%	93.7%	94.7%	94.7%	94.7%	10.8%
	Q2	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	7.6%
	Q3	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	92.1%	15.8%
	Q4	96.5%	96.5%	96.5%	96.2%	96.5%	96.5%	96.5%	9.1%
2009	Q1	79.6%	79.6%	79.6%	78.9%	79.6%	79.6%	79.6%	6.9%
	Q2	98.4%	98.4%	98.4%	98.3%	98.4%	98.4%	98.4%	10.9%
	Q3	93.3%	93.3%	93.3%	88.4%	93.3%	93.3%	93.3%	21.1%
	Q4	97.6%	97.6%	97.5%	97.4%	97.6%	97.6%	97.6%	9.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Oskaloosa, IA

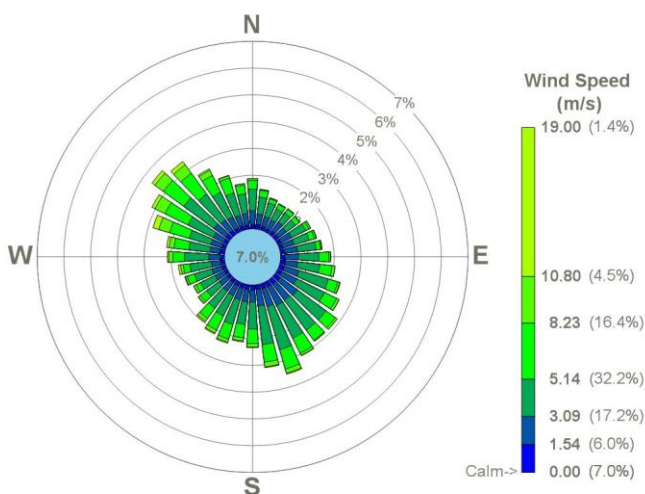
(KOOA)

Station Info

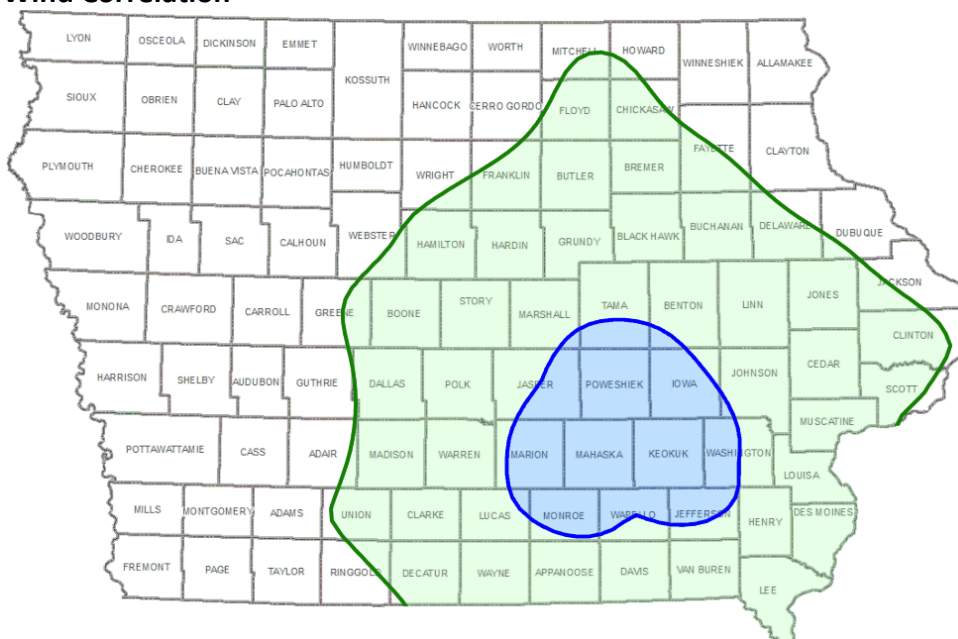
WBAN: 54919
WMO: 720351
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.2273 N, 92.4919 W
UTM (NAD83, Z15): 542584.92, 456114.46
Elevation: 255.7 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KPEA	0.925
KOXV	0.909
KFFL	0.907
KOTM	0.905
KTNU	0.902
KAWG	0.895
KCNC	0.889
KMIW	0.887
KMPZ	0.885
KIOW	0.880
KVTI	0.877
KDSM	0.877
KCID	0.873
KIIB	0.873
KMUT	0.866
KIKV	0.865
KMXO	0.865
KBNW	0.859
KOLZ	0.855
KAMW	0.849

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	Q2	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	3.3%
	Q3	97.4%	97.4%	97.3%	97.1%	91.7%	97.3%	97.3%	13.4%
	Q4	85.3%	85.3%	84.6%	84.6%	83.9%	84.6%	84.6%	4.1%
2006	Q1	96.3%	96.3%	95.6%	95.6%	95.6%	95.6%	95.6%	2.4%
	Q2	94.6%	94.6%	94.5%	94.4%	94.5%	94.5%	94.5%	4.5%
	Q3	93.6%	93.6%	93.1%	93.1%	93.1%	93.1%	93.1%	6.7%
	Q4	92.5%	92.5%	92.3%	92.3%	92.3%	92.3%	92.3%	4.2%
2007	Q1	89.4%	89.4%	88.8%	88.7%	88.8%	88.8%	88.8%	3.1%
	Q2	89.6%	89.6%	89.4%	89.4%	89.4%	89.4%	89.4%	6.3%
	Q3	87.2%	87.2%	87.0%	87.0%	87.0%	87.0%	87.0%	19.2%
	Q4	93.6%	93.6%	92.1%	92.1%	89.9%	92.1%	92.1%	4.4%
2008	Q1	87.2%	87.2%	85.2%	85.0%	85.2%	85.8%	85.8%	4.7%
	Q2	83.2%	83.2%	83.2%	83.2%	83.2%	83.2%	83.2%	4.7%
	Q3	92.7%	92.7%	92.2%	92.1%	92.2%	92.5%	92.5%	17.1%
	Q4	98.4%	98.4%	97.5%	97.5%	97.5%	97.7%	97.7%	6.0%
2009	Q1	92.1%	92.1%	91.9%	91.9%	91.9%	91.9%	91.9%	3.1%
	Q2	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	8.0%
	Q3	99.7%	99.7%	99.5%	99.4%	99.5%	99.5%	99.5%	16.0%
	Q4	85.9%	85.9%	85.4%	85.4%	85.4%	85.5%	85.5%	7.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Ottumwa, IA

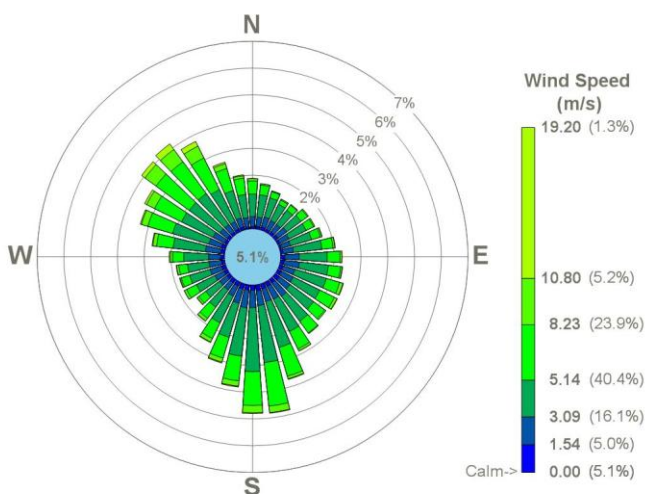
(KOTM)

Station Info

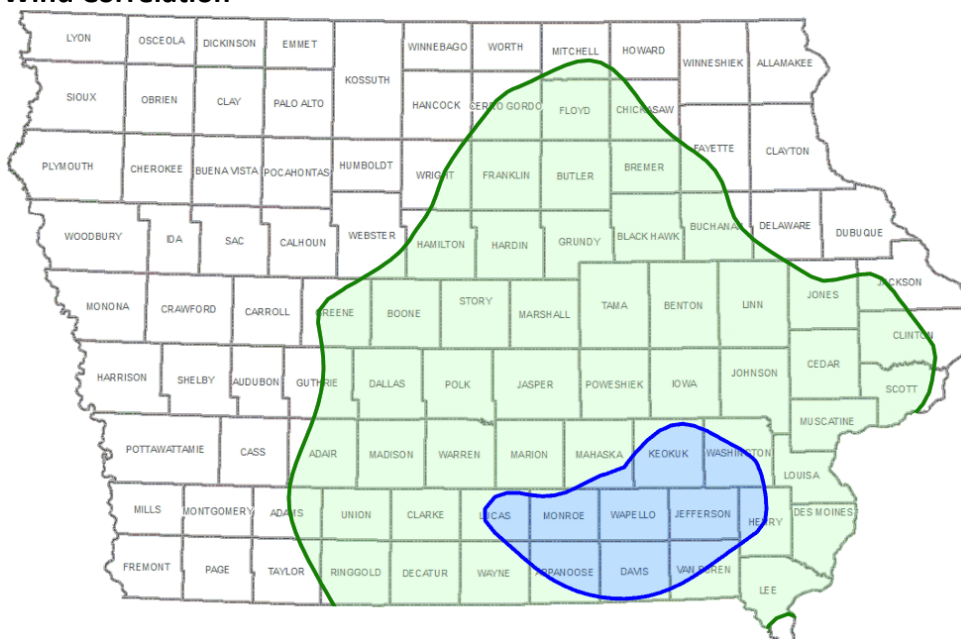
WBAN: 14950
WMO: 725465
Anemometer Height: 10.0 m
1-Min Availability Date: 3/9/2005
IFW Installation Date: 6/13/2007

Location Info

Lat-Long: 41.1008 N, 92.4445 W
UTM (NAD83, Z15): 546647.25, 4550095.57
Elevation: 254.8 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KFFL	0.934
KAWG	0.911
KOOA	0.905
KCNC	0.903
KMPZ	0.895
KCID	0.890
KTNU	0.887
KOXV	0.887
KDSM	0.874
KMIW	0.869
KCSQ	0.860
KBRL	0.853
KUIN	0.852
KFSW	0.845
KIKV	0.845
KALO	0.844
KBNW	0.840
KOLZ	0.840
KLWD	0.839
KVTI	0.839

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	0.6%	96.9%	100.0%	96.2%	97.2%	7.5%
	Q2	100.0%	100.0%	0.0%	99.6%	100.0%	97.8%	100.0%	3.5%
	Q3	100.0%	100.0%	0.5%	98.0%	99.8%	96.6%	99.8%	5.7%
	Q4	99.9%	99.9%	0.2%	96.9%	99.8%	97.8%	98.7%	3.3%
2006	Q1	96.1%	96.1%	1.1%	96.0%	96.0%	95.4%	95.9%	2.2%
	Q2	98.8%	98.8%	2.3%	98.1%	98.3%	96.7%	98.3%	3.1%
	Q3	99.3%	99.3%	1.4%	99.1%	99.2%	97.0%	99.2%	4.8%
	Q4	97.8%	97.8%	1.0%	97.7%	97.8%	96.9%	97.6%	3.1%
2007	Q1	97.0%	97.0%	1.6%	96.6%	96.9%	95.8%	96.5%	1.8%
	Q2	97.2%	97.2%	1.3%	97.1%	97.2%	95.3%	97.1%	4.6%
	Q3	97.1%	97.1%	1.3%	97.1%	97.1%	95.9%	97.1%	7.6%
	Q4	97.6%	97.6%	0.9%	97.3%	97.6%	95.5%	96.2%	3.9%
2008	Q1	95.4%	95.4%	0.6%	95.3%	95.4%	95.2%	95.3%	4.3%
	Q2	99.3%	99.3%	0.8%	99.1%	99.3%	98.5%	99.3%	5.1%
	Q3	99.0%	99.0%	0.5%	98.8%	99.0%	96.6%	99.0%	11.4%
	Q4	100.0%	100.0%	3.2%	99.7%	97.6%	99.4%	99.9%	4.3%
2009	Q1	98.9%	98.9%	0.4%	98.5%	98.9%	98.4%	98.8%	3.0%
	Q2	99.5%	99.5%	1.3%	99.3%	99.5%	98.1%	99.2%	7.4%
	Q3	99.4%	99.4%	0.8%	99.3%	99.3%	97.1%	98.4%	9.9%
	Q4	98.8%	98.8%	0.5%	98.6%	98.8%	98.4%	98.5%	4.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Pella, IA

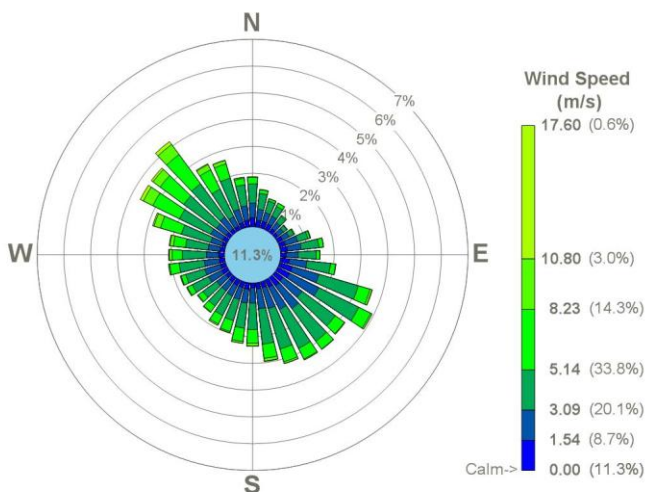
(KPEA)

Station Info

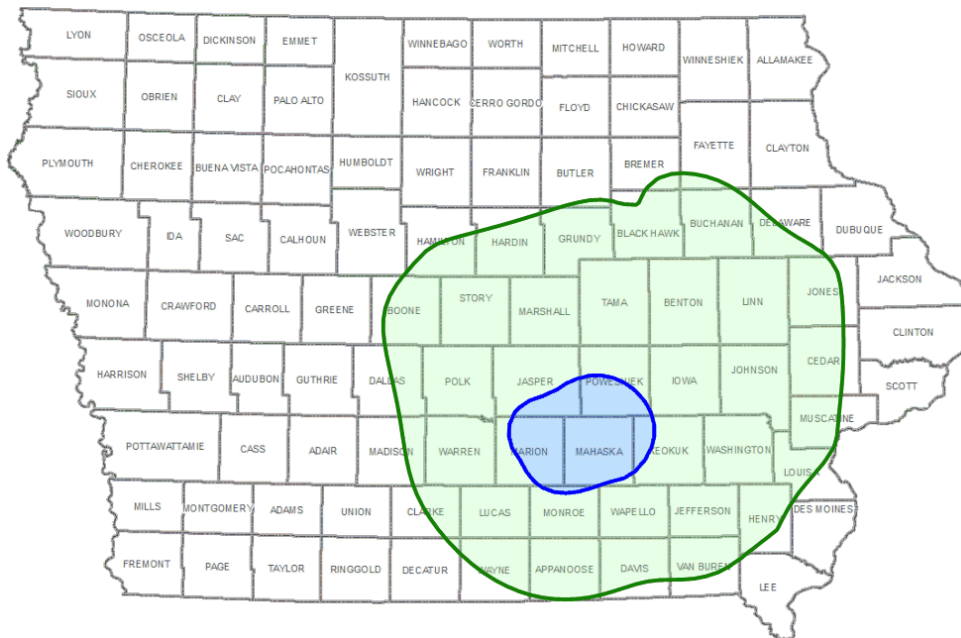
WBAN: NA
WMO: 720312
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.3989 N, 92.9431 W
UTM (NAD83, Z15): 504756.41, 4583041.85
Elevation: 264.9 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KOOA	0.925
KOXV	0.909
KTNU	0.875
KIKV	0.855
KCNC	0.852
KIOW	0.852
KMIW	0.844
KAMW	0.844
KIIB	0.842
KFFL	0.840
KDSM	0.840
KMXO	0.835
KBNW	0.834
KVTI	0.831
KAWG	0.830
KOTM	0.815
KMUT	0.808
KCID	0.805
KMPZ	0.805
KOLZ	0.803

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.9%	96.9%	95.3%	94.5%	95.2%	95.3%	95.3%	10.1%
	Q2	96.8%	96.8%	96.6%	96.5%	96.6%	96.6%	96.6%	8.3%
	Q3	95.5%	95.5%	95.2%	95.0%	95.2%	95.2%	95.2%	19.1%
	Q4	92.8%	92.8%	91.9%	88.9%	91.1%	91.1%	91.1%	11.5%
2006	Q1	98.6%	98.6%	97.8%	97.7%	97.8%	97.8%	97.8%	4.9%
	Q2	94.6%	94.6%	94.5%	94.5%	94.5%	94.5%	94.5%	10.6%
	Q3	94.8%	94.8%	94.4%	93.9%	94.4%	94.4%	94.4%	18.1%
	Q4	92.1%	92.1%	91.8%	91.8%	91.8%	91.8%	91.8%	6.8%
2007	Q1	86.4%	86.4%	85.5%	85.5%	85.5%	85.5%	85.5%	5.0%
	Q2	94.1%	94.1%	93.9%	93.7%	93.9%	93.9%	93.9%	8.8%
	Q3	84.5%	84.5%	84.3%	83.6%	84.3%	84.3%	84.3%	16.0%
	Q4	79.7%	79.7%	78.7%	77.9%	78.7%	78.7%	78.7%	7.3%
2008	Q1	95.1%	95.1%	93.6%	90.8%	93.6%	93.9%	93.9%	7.5%
	Q2	79.9%	79.9%	79.6%	79.6%	79.7%	79.7%	79.7%	7.2%
	Q3	95.4%	95.4%	95.1%	94.3%	95.1%	95.2%	95.2%	22.9%
	Q4	96.2%	96.2%	95.6%	95.4%	95.6%	95.7%	95.7%	9.3%
2009	Q1	85.0%	85.0%	83.5%	83.0%	83.5%	83.5%	83.5%	5.6%
	Q2	98.5%	98.5%	98.0%	97.7%	98.0%	98.4%	98.4%	13.1%
	Q3	99.2%	99.2%	99.1%	98.1%	99.1%	99.1%	99.1%	25.1%
	Q4	91.0%	91.0%	90.0%	90.0%	90.0%	90.3%	90.3%	7.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Prairie Du Chien, WI

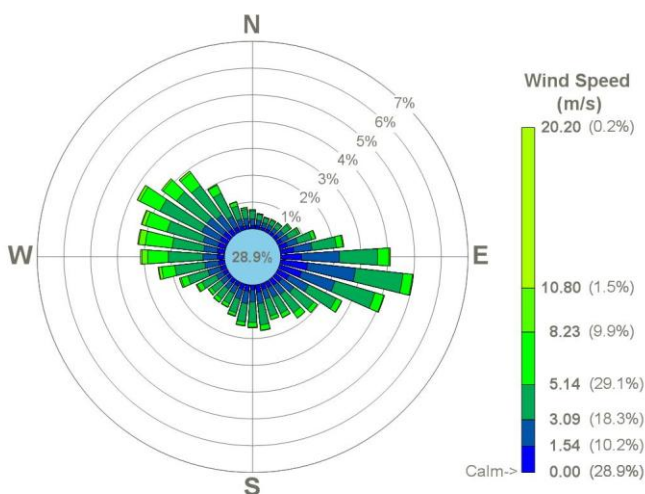
(KPDC)

Station Info

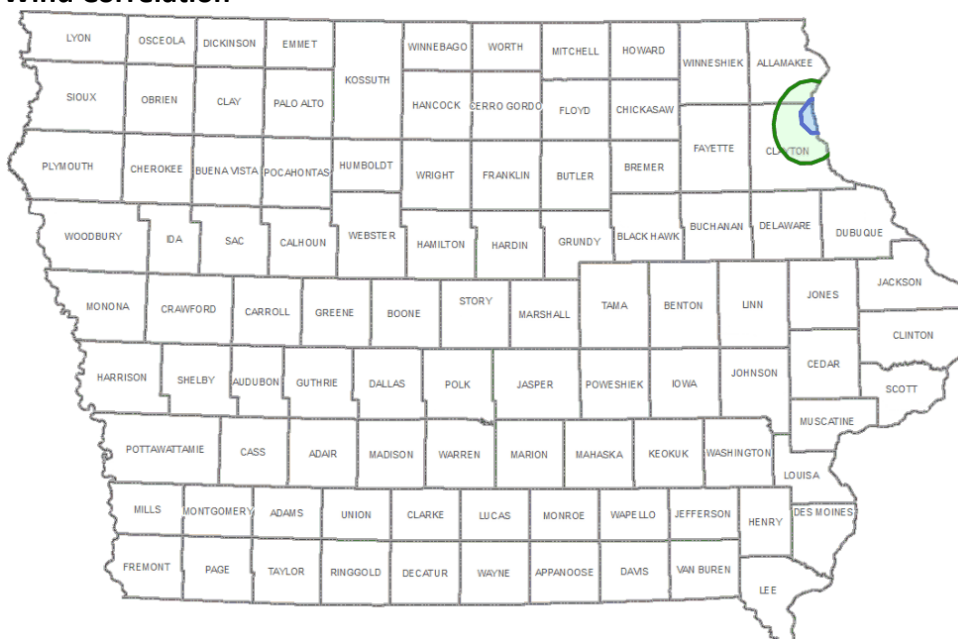
WBAN: 04963
WMO: 726444
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.0193 N, 91.1211 W
UTM (NAD83, Z15): 653100.05, 4764670.99
Elevation: 201.2 m
Confidence: Medium



Wind Correlation



Station	Correlation
KMLI	0.725
KMXO	0.697
KIIB	0.687
KSFY	0.676
KIOW	0.670
KPEA	0.670
KSQI	0.668
KMUT	0.653
KDVN	0.652
KGBG	0.651
KVTI	0.637
KCWI	0.634
KFEP	0.628
KOOA	0.625
KCID	0.621
KAWG	0.618
KALO	0.610
KFFL	0.602
KOXV	0.594
KOLZ	0.585

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.8%	99.8%	99.7%	99.8%	99.8%	99.8%	99.8%	26.0%
	Q2	100.0%	100.0%	99.9%	99.9%	99.9%	99.9%	99.9%	20.7%
	Q3	99.5%	99.5%	99.3%	99.5%	99.5%	99.5%	99.5%	32.3%
	Q4	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	28.1%
2006	Q1	99.3%	99.3%	98.0%	99.3%	99.3%	99.3%	99.3%	19.7%
	Q2	99.0%	99.0%	98.9%	98.9%	99.0%	99.0%	99.0%	28.8%
	Q3	99.3%	99.3%	98.9%	98.0%	99.3%	99.3%	99.3%	43.4%
	Q4	99.1%	99.1%	98.7%	98.7%	99.1%	99.1%	99.1%	26.3%
2007	Q1	99.1%	99.1%	99.1%	96.5%	99.1%	99.1%	99.1%	23.5%
	Q2	98.9%	98.9%	98.5%	98.9%	98.9%	98.9%	98.9%	30.4%
	Q3	88.4%	88.4%	85.3%	88.1%	88.4%	88.4%	88.4%	32.1%
	Q4	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	22.1%
2008	Q1	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	26.0%
	Q2	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	21.7%
	Q3	99.4%	99.4%	99.4%	99.4%	99.4%	99.4%	99.4%	39.3%
	Q4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	25.7%
2009	Q1	93.1%	93.1%	93.1%	93.1%	92.2%	93.1%	93.1%	22.9%
	Q2	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	27.9%
	Q3	94.8%	94.8%	94.5%	94.0%	94.5%	94.5%	94.5%	43.0%
	Q4	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%	37.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Preston, MN

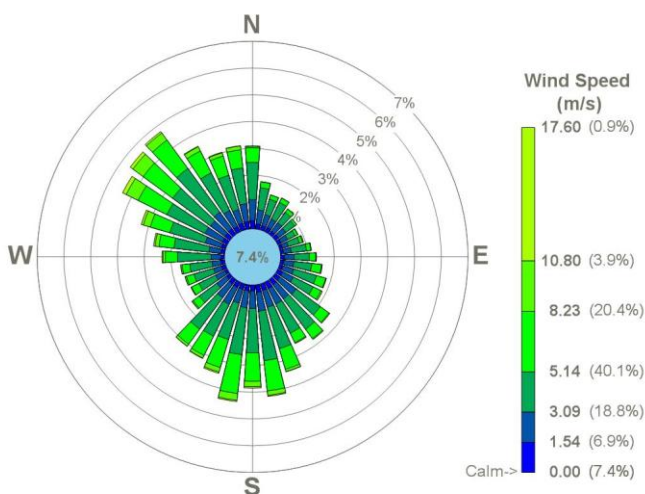
(KFKA)

Station Info

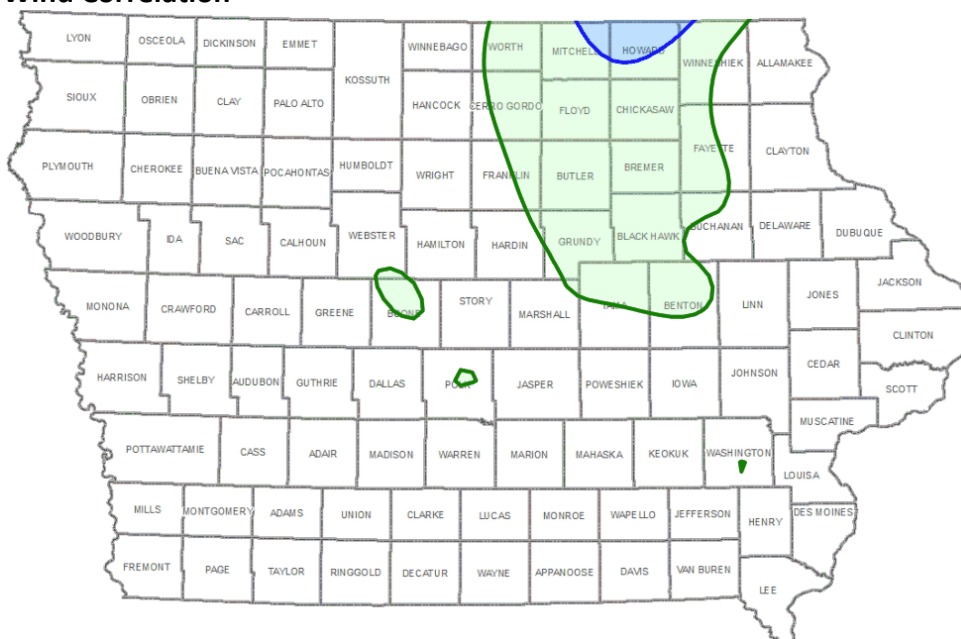
WBAN: 04927
WMO: 720283
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6770 N, 92.1743 W
UTM (NAD83, Z15): 566557.95, 4836330.17
Elevation: 388.6 m
Confidence: High



Wind Correlation



Station	Correlation
KRST	0.896
KAUM	0.895
KCCY	0.876
KOLZ	0.849
KLSE	0.824
KALO	0.811
KIKV	0.807
KMCW	0.807
KVTI	0.805
KBNW	0.805
KAWG	0.802
KAXA	0.801
KMJQ	0.800
KMIW	0.799
KOXV	0.795
KFOD	0.795
KCID	0.794
KTNU	0.794
KEBS	0.793
KDBQ	0.793

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.7%	99.7%	98.8%	98.2%	98.8%	98.8%	98.8%	5.7%
	Q2	100.0%	100.0%	100.0%	99.6%	100.0%	100.0%	100.0%	7.2%
	Q3	99.6%	99.6%	99.6%	99.5%	99.6%	99.6%	99.6%	10.9%
	Q4	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	10.0%
2006	Q1	99.4%	99.4%	99.2%	99.3%	99.4%	99.4%	99.4%	3.7%
	Q2	99.0%	99.0%	99.0%	98.9%	99.0%	99.0%	99.0%	5.4%
	Q3	99.4%	99.4%	99.4%	99.3%	99.4%	99.4%	99.4%	8.6%
	Q4	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	4.6%
2007	Q1	99.0%	99.0%	99.0%	95.3%	99.0%	99.0%	99.0%	4.6%
	Q2	99.7%	99.7%	99.7%	99.5%	99.7%	99.7%	99.7%	5.9%
	Q3	97.4%	97.4%	97.3%	97.0%	97.3%	97.3%	97.3%	12.0%
	Q4	97.2%	97.2%	97.2%	97.1%	97.2%	97.2%	97.2%	6.1%
2008	Q1	98.5%	98.5%	98.5%	98.4%	98.5%	98.5%	98.5%	6.6%
	Q2	98.4%	98.4%	98.4%	98.3%	98.4%	98.4%	98.4%	5.8%
	Q3	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	8.6%
	Q4	99.5%	99.5%	99.2%	98.6%	99.2%	99.2%	99.2%	5.1%
2009	Q1	98.2%	98.2%	98.2%	98.1%	98.2%	98.2%	98.2%	4.6%
	Q2	98.5%	98.5%	98.4%	98.2%	98.4%	98.5%	98.5%	7.5%
	Q3	99.7%	99.7%	99.6%	99.5%	99.6%	99.7%	99.7%	19.4%
	Q4	99.5%	99.5%	99.4%	99.0%	99.4%	99.4%	99.4%	5.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

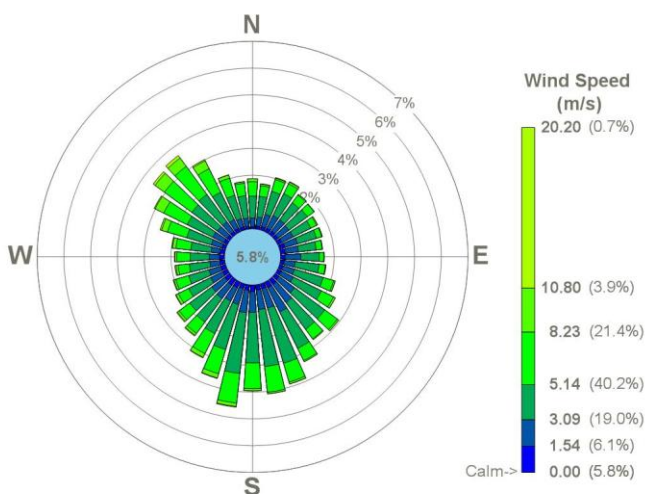
Quincy, IL (KUIN)

Station Info

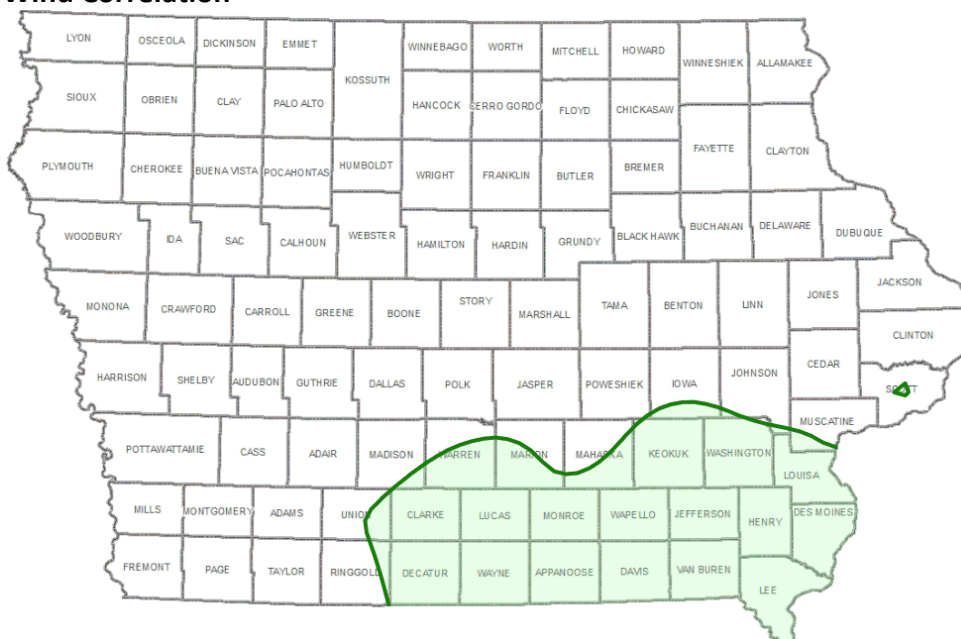
WBAN: 93989
WMO: 724396
Anemometer Height: 7.9 m
1-Min Availability Date: 3/9/2005
IFW Installation Date: 9/20/2006

Location Info

Lat-Long: 39.9387 N, 91.1980 W
UTM (NAD83, Z15): 653960.15, 4422508.10
Elevation: 231.0 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KBRL	0.892
KMQB	0.890
KMPZ	0.888
KFSW	0.887
KIRK	0.869
KEOK	0.868
KFFL	0.863
KAWG	0.859
KOTM	0.852
KCNC	0.832
KOOA	0.825
KOXV	0.822
KGBG	0.821
KLWD	0.811
KDVN	0.806
KMUT	0.798
KTNU	0.796
KCSQ	0.794
KDSM	0.782
KCID	0.780

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	0.0%	98.2%	100.0%	98.8%	99.9%	3.3%
	Q2	100.0%	100.0%	0.0%	98.0%	100.0%	98.4%	100.0%	2.7%
	Q3	100.0%	100.0%	1.8%	91.2%	99.3%	96.3%	99.9%	7.4%
	Q4	100.0%	100.0%	0.5%	95.2%	100.0%	98.7%	99.8%	4.8%
2006	Q1	96.1%	96.1%	0.6%	96.0%	96.0%	95.3%	96.0%	2.3%
	Q2	98.5%	98.5%	1.1%	98.4%	98.5%	96.2%	98.5%	4.2%
	Q3	99.3%	99.3%	0.5%	99.3%	99.3%	97.1%	99.1%	6.8%
	Q4	94.8%	94.8%	0.5%	94.7%	94.8%	94.4%	94.8%	4.8%
2007	Q1	95.4%	95.4%	1.1%	95.4%	95.4%	95.0%	95.4%	4.2%
	Q2	97.5%	97.5%	1.1%	97.1%	97.4%	95.9%	97.4%	6.8%
	Q3	97.1%	97.1%	0.1%	97.1%	97.1%	95.3%	97.1%	8.9%
	Q4	98.8%	98.8%	0.5%	98.7%	98.8%	98.5%	98.8%	5.4%
2008	Q1	97.5%	97.5%	1.3%	97.3%	97.0%	96.7%	97.4%	4.3%
	Q2	99.1%	99.1%	0.5%	98.9%	99.0%	98.3%	99.0%	5.5%
	Q3	98.9%	98.9%	0.5%	98.9%	98.9%	97.0%	98.8%	13.4%
	Q4	100.0%	100.0%	0.4%	99.9%	99.9%	99.4%	99.9%	4.4%
2009	Q1	98.6%	98.6%	0.2%	98.5%	98.5%	97.9%	98.5%	3.4%
	Q2	99.5%	99.5%	0.4%	99.4%	99.5%	97.9%	99.4%	8.6%
	Q3	99.5%	99.5%	0.5%	99.4%	99.5%	98.3%	99.5%	10.5%
	Q4	97.8%	97.8%	0.4%	95.0%	97.8%	97.4%	97.7%	4.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Red Oak, IA

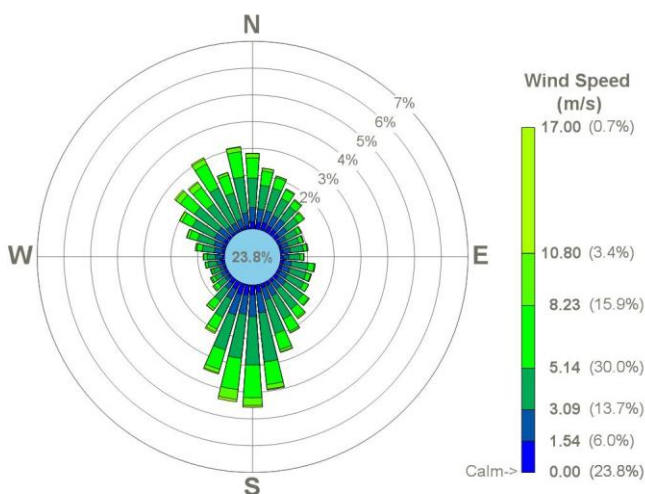
(KRDK)

Station Info

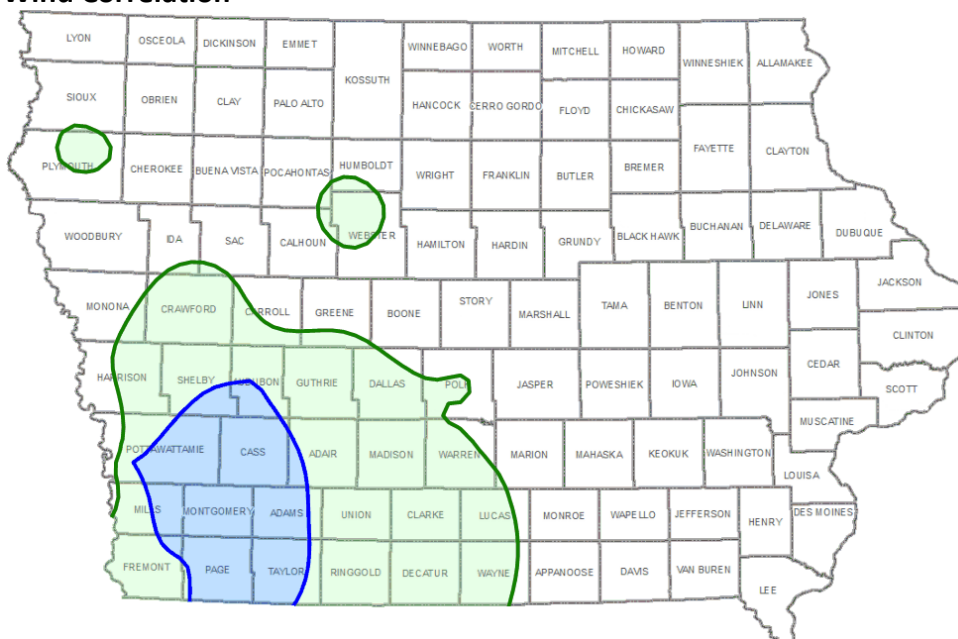
WBAN: NA
WMO: 725494
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.0107 N, 95.2626 W
UTM (NAD83, Z15): 309735.69, 4542410.74
Elevation: 317.3 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KICL	0.933
KAIO	0.927
KHNR	0.899
KADU	0.898
KCBF	0.897
KAFK	0.896
KSDA	0.885
KCSQ	0.869
KDNS	0.863
KSTJ	0.863
KLWD	0.849
KLRJ	0.842
KFOD	0.826
KCNC	0.819
KIKV	0.808
KDSM	0.796
KORC	0.780
KTNU	0.773
KOXV	0.773
KTQE	0.771

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	94.8%	94.8%	94.8%	94.8%	94.8%	94.8%	94.8%	20.8%
	Q2	91.8%	91.8%	91.7%	91.8%	91.8%	91.8%	91.8%	15.0%
	Q3	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	40.4%
	Q4	91.3%	91.3%	91.3%	90.9%	91.3%	91.3%	91.3%	44.3%
2006	Q1	94.4%	94.4%	94.4%	93.8%	94.4%	94.4%	94.4%	26.5%
	Q2	95.1%	95.1%	95.0%	94.6%	95.1%	95.1%	95.1%	21.1%
	Q3	92.6%	92.6%	92.5%	90.6%	92.6%	92.6%	92.6%	28.0%
	Q4	92.9%	92.9%	92.9%	92.8%	92.9%	92.9%	92.9%	21.5%
2007	Q1	93.6%	93.6%	93.6%	93.4%	93.6%	93.6%	93.6%	13.4%
	Q2	95.9%	95.9%	95.7%	95.7%	95.9%	95.9%	95.9%	16.8%
	Q3	89.9%	89.9%	89.9%	89.7%	88.3%	89.9%	89.9%	25.7%
	Q4	92.3%	92.3%	92.3%	92.0%	92.3%	92.3%	92.3%	23.2%
2008	Q1	91.9%	91.9%	91.9%	91.8%	91.9%	91.9%	91.9%	19.9%
	Q2	89.2%	89.2%	89.2%	88.9%	89.2%	89.2%	89.2%	16.3%
	Q3	93.5%	93.5%	93.4%	93.3%	93.5%	93.5%	93.5%	30.0%
	Q4	95.1%	95.1%	95.1%	95.0%	95.1%	95.1%	95.1%	21.0%
2009	Q1	96.8%	96.8%	96.8%	96.6%	96.8%	96.8%	96.8%	16.4%
	Q2	95.5%	95.5%	95.3%	95.2%	95.5%	95.5%	95.5%	18.4%
	Q3	99.3%	99.3%	99.3%	99.0%	99.3%	99.3%	99.3%	36.2%
	Q4	96.3%	96.3%	95.7%	95.4%	95.7%	95.7%	95.7%	19.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Rochester, MN

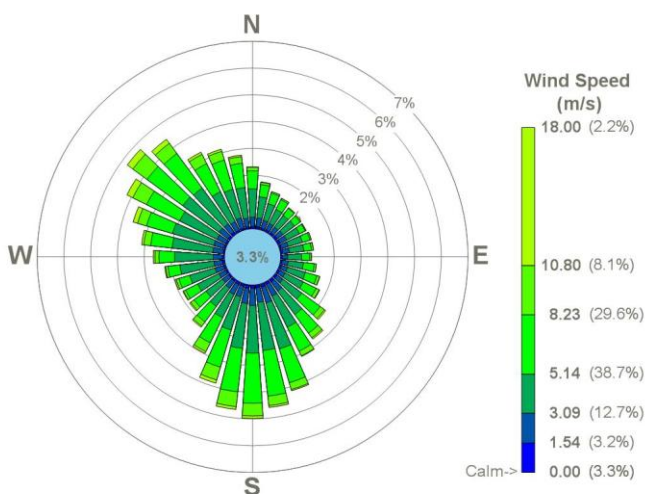
(KRST)

Station Info

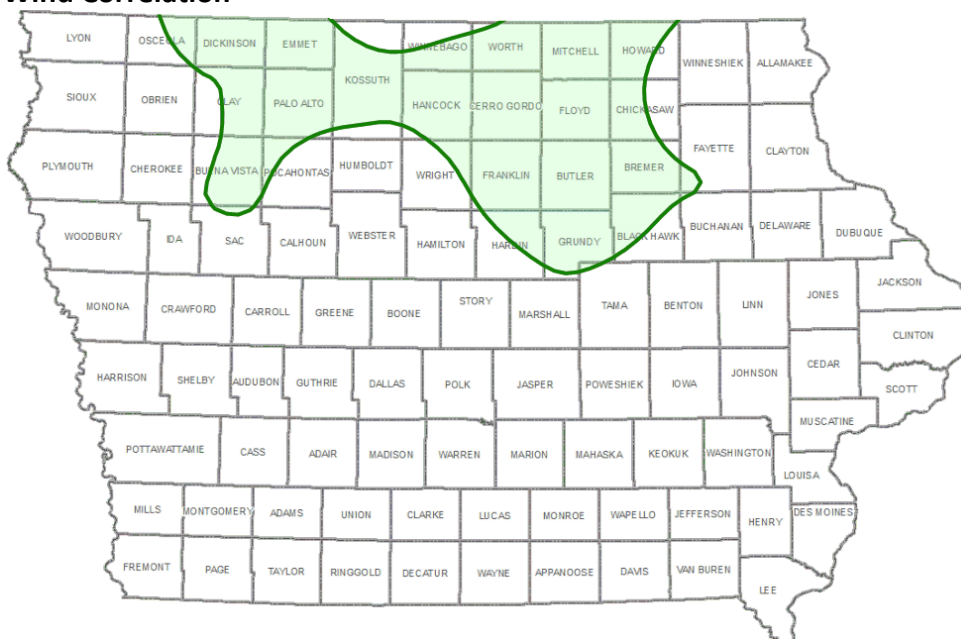
WBAN: 14925
WMO: 726440
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 5/30/2007

Location Info

Lat-Long: 43.9040 N, 92.4921 W
UTM (NAD83, Z15): 540786.06, 4861335.78
Elevation: 396.5 m
Confidence: High



Wind Correlation



Station	Correlation
KFKA	0.896
KMCW	0.880
KAUM	0.846
KMJQ	0.842
KCCY	0.840
KEST	0.834
KALO	0.825
KOTG	0.816
KAXA	0.813
KOLZ	0.812
KSLB	0.809
KSPW	0.800
KMIW	0.791
KCIN	0.787
KCAV	0.781
KDBQ	0.776
KFRM	0.773
KSHL	0.773
KBNW	0.769
KEBS	0.769

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	100.0%	100.0%	89.9%	99.1%	100.0%	99.8%	100.0%	3.1%
	Q2	100.0%	100.0%	70.3%	99.1%	99.9%	98.4%	99.9%	2.8%
	Q3	100.0%	100.0%	81.6%	97.1%	99.9%	97.9%	99.8%	3.3%
	Q4	100.0%	100.0%	70.2%	98.5%	100.0%	99.3%	99.6%	2.7%
2006	Q1	98.3%	98.3%	65.8%	98.3%	98.3%	98.1%	98.2%	2.0%
	Q2	98.9%	98.9%	16.9%	98.9%	98.9%	97.6%	98.9%	2.3%
	Q3	99.5%	99.5%	16.6%	99.5%	99.5%	97.1%	99.3%	2.6%
	Q4	99.0%	99.0%	16.5%	99.0%	99.0%	98.0%	98.5%	2.1%
2007	Q1	97.9%	97.9%	15.9%	97.8%	97.9%	97.6%	97.9%	3.8%
	Q2	98.8%	98.8%	17.0%	98.5%	98.7%	96.7%	98.1%	2.3%
	Q3	96.8%	96.8%	16.9%	96.5%	96.7%	95.1%	96.4%	5.0%
	Q4	97.0%	97.0%	17.4%	96.8%	96.9%	96.8%	96.9%	2.4%
2008	Q1	96.5%	96.4%	16.6%	96.3%	96.4%	96.3%	96.4%	3.3%
	Q2	98.2%	98.2%	16.5%	97.8%	98.2%	96.9%	98.0%	3.4%
	Q3	97.8%	97.8%	16.4%	97.7%	97.7%	96.1%	97.7%	5.2%
	Q4	99.7%	99.7%	17.2%	99.5%	99.7%	99.3%	99.5%	3.0%
2009	Q1	99.0%	99.0%	16.9%	98.8%	98.9%	98.6%	98.8%	2.0%
	Q2	99.6%	99.6%	16.8%	99.6%	99.6%	98.0%	99.6%	3.9%
	Q3	99.6%	99.6%	16.8%	99.5%	99.6%	98.1%	99.4%	7.9%
	Q4	99.5%	99.5%	17.5%	99.3%	99.0%	99.1%	99.5%	2.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Savanna, IL

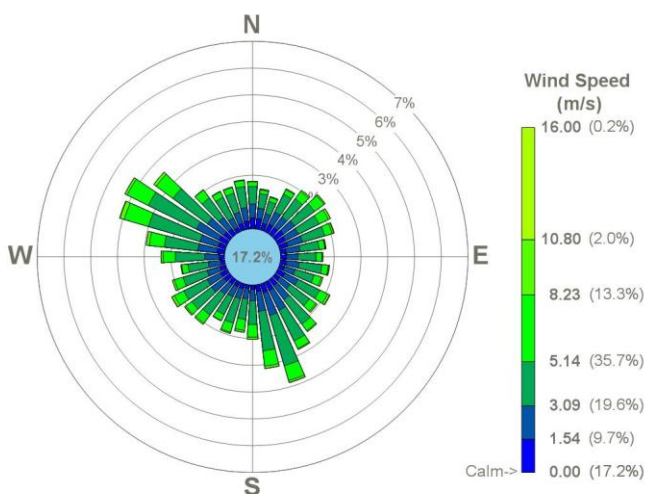
(KSFY)

Station Info

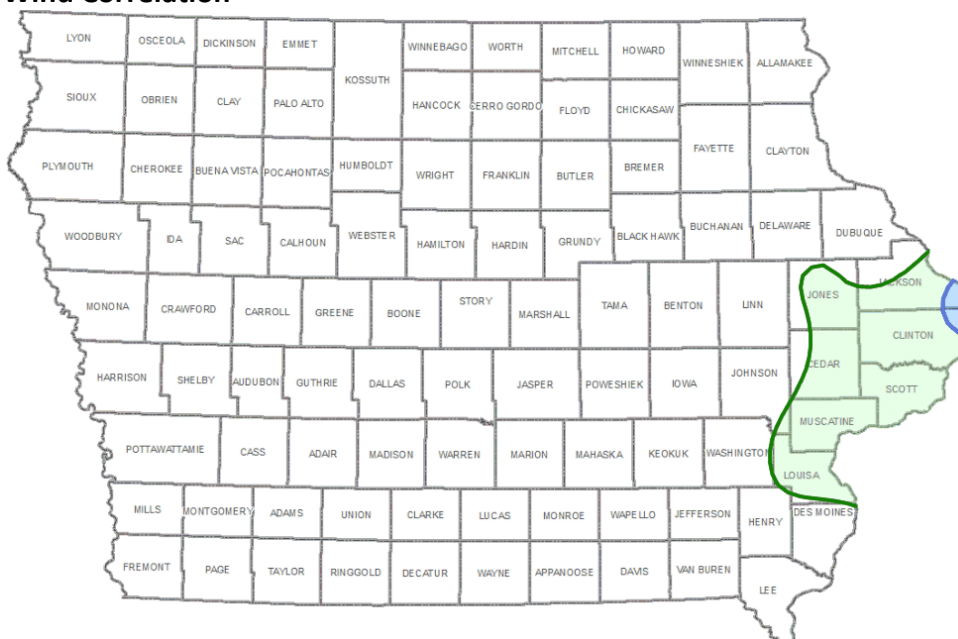
WBAN: 04996
WMO: 722204
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.0455 N, 90.1101 W
UTM (NAD83, Z15): 739174.68, 4658869.48
Elevation: 187.1 m
Confidence: Low



Wind Correlation



Station	Correlation
KCWI	0.857
KMUT	0.845
KFEP	0.838
KGBG	0.832
KMLI	0.825
KDVN	0.821
KMXO	0.813
KMQB	0.790
KAWG	0.788
KMPZ	0.785
KVTI	0.785
KIOW	0.776
KFFL	0.769
KSQI	0.764
KOOA	0.757
KIIB	0.750
KOLZ	0.743
KFSW	0.739
KCID	0.730
KALO	0.723

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	14.2%
	Q2	99.5%	99.5%	99.5%	99.4%	99.5%	99.5%	99.5%	14.8%
	Q3	98.7%	98.7%	98.7%	98.2%	98.7%	98.7%	98.7%	24.4%
	Q4	98.3%	98.3%	98.3%	98.2%	98.3%	98.3%	98.3%	14.6%
2006	Q1	98.2%	98.2%	98.2%	98.2%	98.2%	98.2%	98.2%	10.9%
	Q2	98.3%	98.3%	98.2%	98.2%	98.2%	98.2%	98.2%	16.2%
	Q3	98.6%	98.6%	98.6%	98.3%	98.6%	98.6%	98.6%	22.6%
	Q4	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	12.8%
2007	Q1	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	96.8%	11.0%
	Q2	97.2%	97.2%	97.2%	97.1%	97.2%	97.2%	97.2%	14.9%
	Q3	97.0%	97.0%	96.9%	96.6%	96.9%	96.9%	96.9%	23.7%
	Q4	97.8%	97.8%	97.8%	97.8%	97.8%	97.8%	97.8%	16.0%
2008	Q1	97.7%	97.7%	97.2%	97.2%	97.2%	97.2%	97.2%	15.6%
	Q2	98.5%	98.5%	98.4%	98.4%	98.4%	98.5%	98.5%	12.8%
	Q3	90.6%	90.6%	90.5%	90.4%	90.5%	90.5%	90.5%	28.0%
	Q4	96.5%	96.5%	96.5%	96.4%	96.5%	96.5%	96.5%	14.0%
2009	Q1	95.8%	95.8%	95.8%	95.8%	95.8%	95.8%	95.8%	14.6%
	Q2	97.4%	97.4%	97.0%	96.9%	96.7%	97.0%	97.0%	17.8%
	Q3	99.6%	99.6%	99.2%	99.2%	99.4%	99.5%	99.5%	29.6%
	Q4	99.1%	99.1%	99.1%	99.0%	99.1%	99.1%	99.1%	14.7%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Sheldon, IA

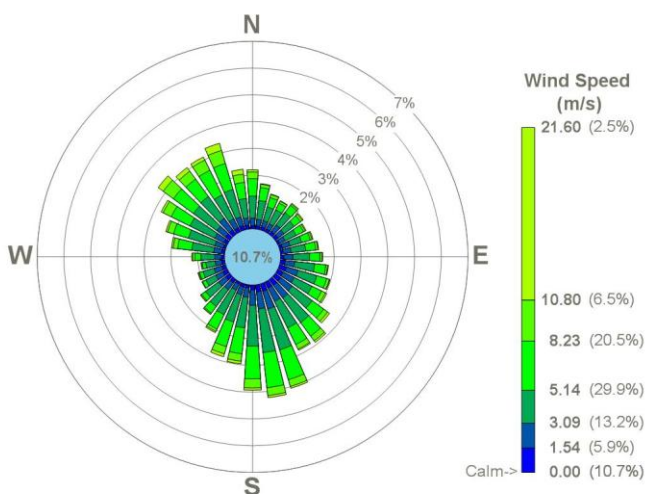
(KSHL)

Station Info

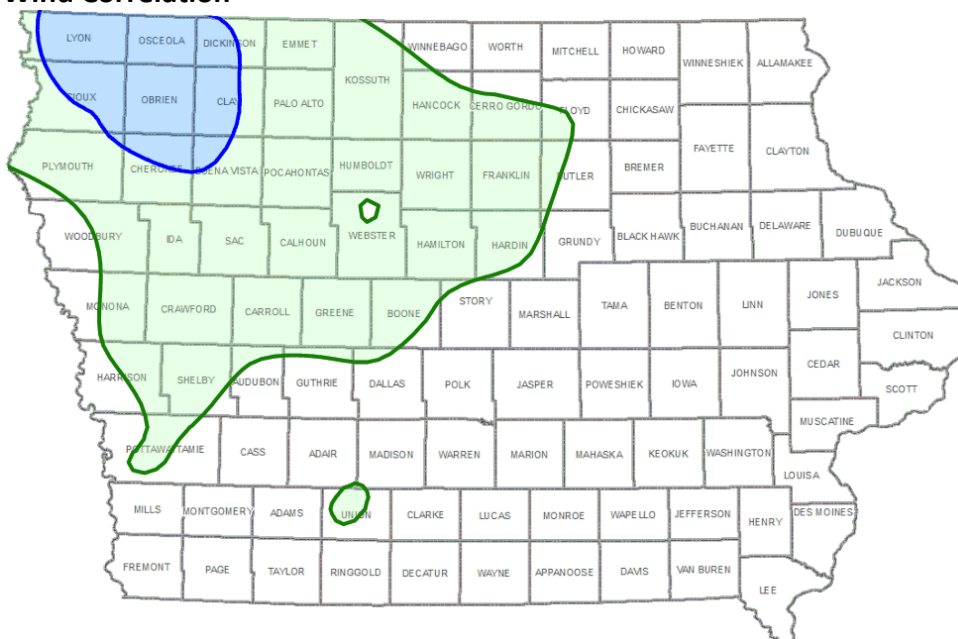
WBAN: NA
WMO: 725495
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.2080 N, 95.8352 W
UTM (NAD83, Z15): 269682.54, 4787816.37
Elevation: 429.8 m
Confidence: Medium



Wind Correlation



Station	Correlation
KLYV	0.908
KSPW	0.906
KORC	0.898
KSLB	0.892
KMJQ	0.886
KFSD	0.878
KLRJ	0.873
KEST	0.873
KDNS	0.871
KOTG	0.870
KAXA	0.867
KCIN	0.830
KEBS	0.826
KHNR	0.822
KCAV	0.815
KCBF	0.813
KBNW	0.809
KCSQ	0.808
KYKN	0.802
KMCW	0.798

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	84.7%	84.7%	84.7%	84.6%	84.7%	84.7%	84.7%	7.2%
	Q2	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	3.2%
	Q3	89.4%	89.4%	89.4%	89.3%	89.4%	89.4%	89.4%	16.7%
	Q4	86.1%	86.1%	86.0%	86.0%	86.1%	86.1%	86.1%	17.5%
2006	Q1	92.7%	92.7%	92.5%	92.6%	92.7%	92.7%	92.7%	5.4%
	Q2	89.7%	89.7%	89.5%	88.4%	89.7%	89.7%	89.7%	7.5%
	Q3	90.4%	90.4%	90.4%	90.3%	90.4%	90.4%	90.4%	14.9%
	Q4	90.7%	90.7%	90.7%	90.6%	90.7%	90.7%	90.7%	9.4%
2007	Q1	81.8%	81.8%	81.2%	81.8%	81.8%	81.8%	81.8%	8.4%
	Q2	94.0%	94.0%	93.8%	94.0%	94.0%	94.0%	94.0%	6.7%
	Q3	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	79.9%	12.1%
	Q4	89.8%	89.8%	89.5%	89.5%	89.8%	89.8%	89.8%	10.5%
2008	Q1	94.7%	94.7%	94.0%	93.9%	94.0%	94.1%	94.1%	9.9%
	Q2	87.3%	87.3%	87.0%	87.2%	87.3%	87.3%	87.3%	6.6%
	Q3	72.6%	72.6%	72.6%	72.6%	72.6%	72.6%	72.6%	13.1%
	Q4	96.9%	96.9%	96.7%	96.7%	96.8%	96.8%	96.8%	9.2%
2009	Q1	93.7%	93.7%	93.7%	93.6%	93.7%	93.7%	93.7%	6.3%
	Q2	95.9%	95.9%	95.7%	95.8%	95.9%	95.9%	95.9%	8.1%
	Q3	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	26.7%
	Q4	94.0%	94.0%	93.7%	94.0%	94.0%	94.0%	94.0%	13.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Shenandoah, IA

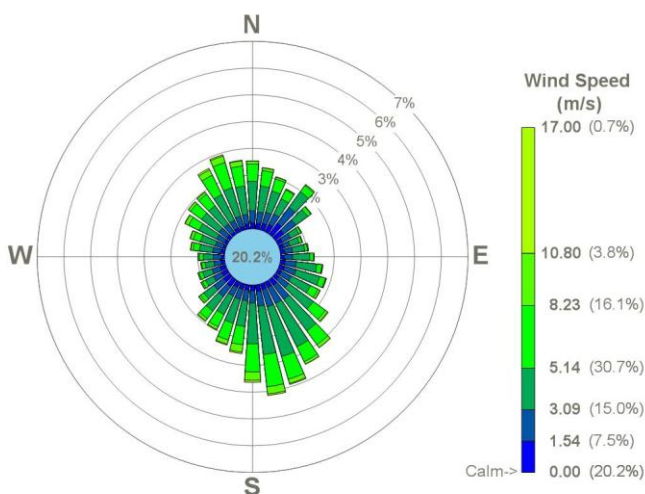
(KSDA)

Station Info

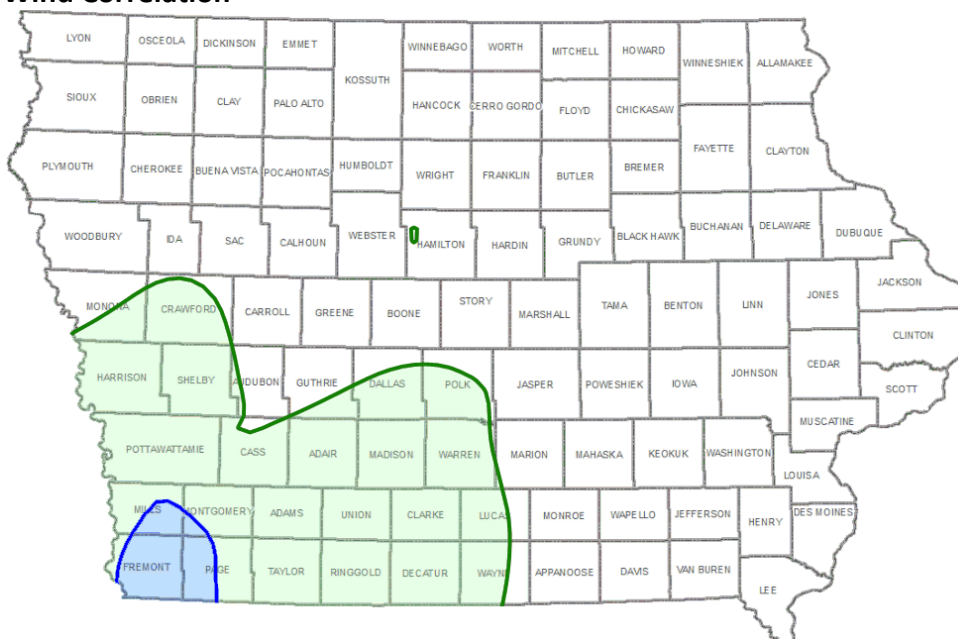
WBAN: NA
WMO: 725467
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 40.7533 N, 95.4112 W
UTM (NAD83, Z15): 296451.18, 4514168.47
Elevation: 293.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KCBF	0.901
KAFK	0.887
KRDK	0.885
KCSQ	0.873
KSTJ	0.864
KLWD	0.855
KICL	0.848
KHNR	0.846
KDNS	0.834
KDSM	0.827
KTQE	0.824
KOMA	0.820
KOFF	0.816
KCNC	0.814
KEBS	0.805
KIKV	0.804
KAIO	0.798
KTNU	0.788
KADU	0.787
KAMW	0.782

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	96.1%	96.1%	95.9%	95.3%	95.5%	95.9%	95.9%	21.5%
	Q2	95.1%	95.1%	95.1%	95.0%	95.0%	95.1%	95.1%	11.5%
	Q3	96.5%	96.5%	96.0%	93.5%	96.0%	96.0%	96.0%	30.7%
	Q4	91.3%	91.3%	91.3%	91.1%	91.3%	91.3%	91.3%	21.3%
2006	Q1	97.6%	97.6%	97.1%	97.0%	97.1%	97.1%	97.1%	15.9%
	Q2	94.6%	94.6%	94.6%	94.0%	94.6%	94.6%	94.6%	16.6%
	Q3	97.5%	97.5%	97.0%	96.8%	97.0%	97.0%	97.0%	24.4%
	Q4	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	23.3%
2007	Q1	95.4%	95.4%	95.4%	94.6%	95.4%	95.4%	95.4%	14.5%
	Q2	94.7%	94.7%	94.7%	94.6%	94.7%	94.7%	94.7%	13.6%
	Q3	80.8%	80.8%	80.8%	80.6%	80.8%	80.8%	80.8%	20.9%
	Q4	96.6%	96.6%	96.6%	95.8%	96.6%	96.6%	96.6%	23.5%
2008	Q1	90.3%	90.3%	90.3%	90.0%	90.3%	90.3%	90.3%	17.3%
	Q2	79.0%	79.0%	78.7%	78.5%	78.7%	78.7%	78.7%	14.2%
	Q3	96.9%	96.9%	96.5%	96.4%	96.5%	96.6%	96.6%	26.2%
	Q4	98.4%	98.4%	98.4%	98.3%	98.4%	98.4%	98.4%	20.7%
2009	Q1	94.0%	94.0%	93.9%	93.9%	93.9%	93.9%	93.9%	13.4%
	Q2	98.5%	98.5%	98.5%	98.4%	98.5%	98.5%	98.5%	17.9%
	Q3	98.5%	98.5%	98.5%	98.3%	98.5%	98.5%	98.5%	37.9%
	Q4	96.4%	96.4%	96.4%	95.8%	96.4%	96.4%	96.4%	19.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Sioux City, IA

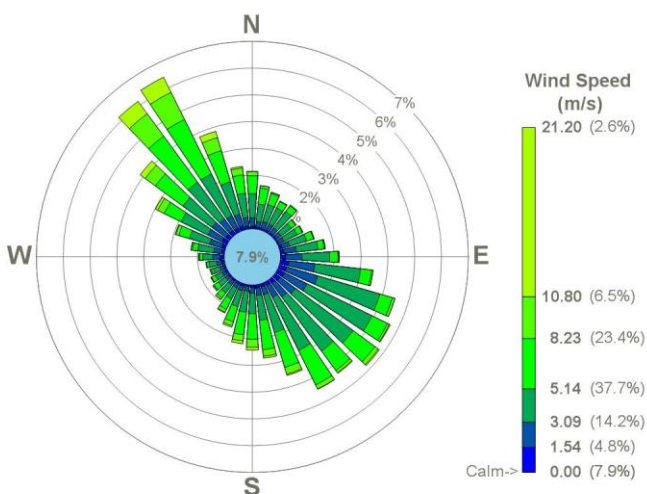
(KSUX)

Station Info

WBAN: 14943
WMO: 725570
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 4/30/2009

Location Info

Lat-Long: 42.3917 N, 96.3795 W
UTM (NAD83, Z15): 221825.90, 4698802.10
Elevation: 333.5 m
Confidence: High



Wind Correlation



Station	Correlation
KYKN	0.837
KOFF	0.827
KTQE	0.763
KDSM	0.736
KCAV	0.726
KCBF	0.722
KAMW	0.721
KSHL	0.719
KMIW	0.716
KSPW	0.708
KORC	0.701
KFSD	0.701
KMLE	0.701
KDNS	0.699
KEBS	0.696
KCIN	0.695
KBNW	0.694
KAXA	0.691
KCCY	0.682
KSLB	0.680

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.6%	99.6%	87.5%	98.0%	99.6%	98.2%	99.6%	5.4%
	Q2	100.0%	100.0%	69.4%	98.9%	100.0%	98.6%	100.0%	3.3%
	Q3	100.0%	100.0%	71.7%	98.5%	100.0%	97.4%	100.0%	7.8%
	Q4	100.0%	100.0%	67.5%	98.1%	100.0%	99.1%	99.9%	7.3%
2006	Q1	98.4%	98.4%	64.9%	98.3%	98.4%	97.3%	98.4%	5.3%
	Q2	99.1%	99.1%	17.5%	99.1%	99.1%	96.4%	99.1%	5.8%
	Q3	99.5%	99.5%	19.2%	98.9%	99.2%	95.6%	99.0%	8.2%
	Q4	98.9%	98.9%	16.7%	98.9%	98.9%	97.0%	98.4%	7.7%
2007	Q1	97.9%	97.8%	17.4%	97.0%	97.8%	96.7%	97.3%	4.5%
	Q2	98.7%	98.7%	17.4%	98.5%	98.6%	96.6%	98.6%	5.7%
	Q3	97.5%	97.5%	17.7%	96.1%	97.5%	95.6%	97.5%	8.2%
	Q4	98.8%	98.7%	19.2%	96.6%	96.1%	95.9%	96.6%	14.7%
2008	Q1	96.8%	96.7%	17.8%	96.7%	96.7%	96.5%	96.8%	12.2%
	Q2	97.5%	97.5%	17.6%	97.4%	97.1%	94.8%	97.3%	7.3%
	Q3	99.2%	99.2%	17.3%	99.1%	99.1%	95.2%	99.1%	9.3%
	Q4	99.8%	99.8%	17.1%	99.5%	99.8%	98.6%	99.7%	7.9%
2009	Q1	98.9%	98.9%	17.6%	98.6%	98.9%	97.7%	98.9%	5.1%
	Q2	99.5%	99.5%	17.3%	99.5%	99.5%	97.7%	99.4%	9.0%
	Q3	99.4%	99.4%	19.1%	98.9%	99.2%	97.1%	98.7%	14.8%
	Q4	99.3%	99.3%	18.3%	99.0%	99.3%	98.9%	99.3%	9.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Sioux Falls, SD

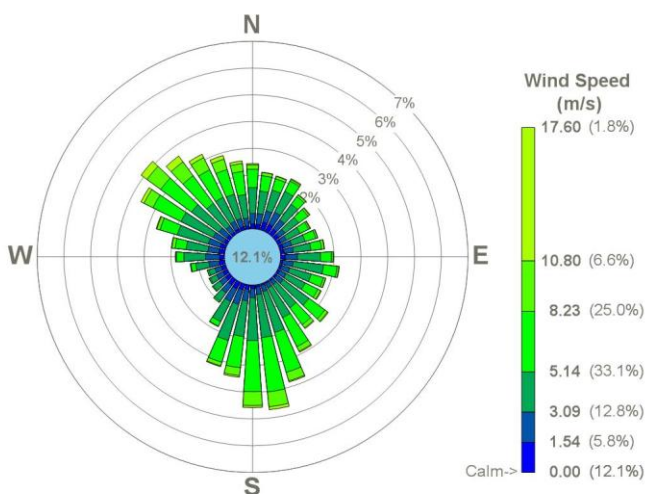
(KFSD)

Station Info

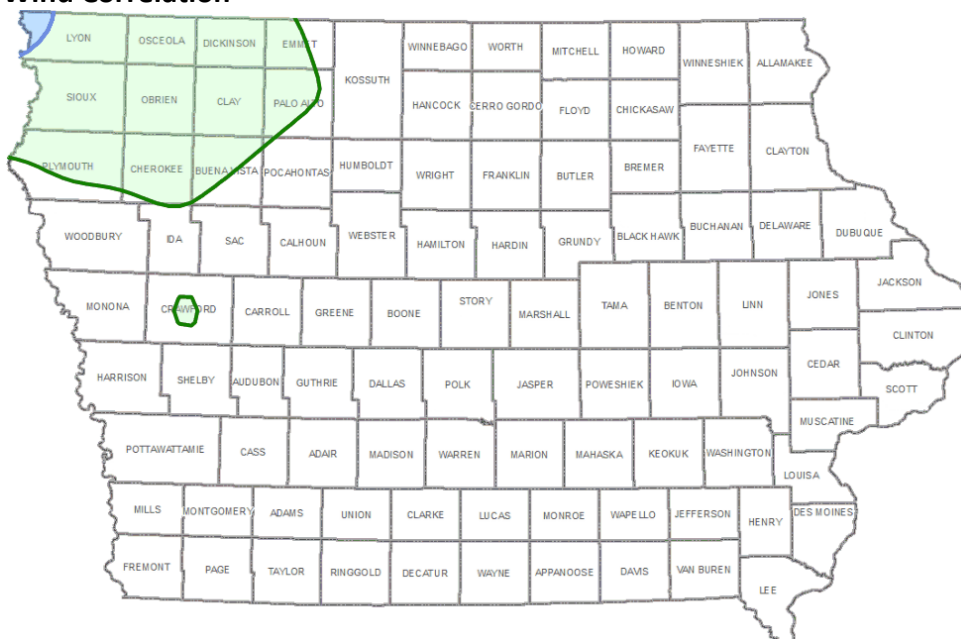
WBAN: 14944
WMO: 726510
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 6/7/2006

Location Info

Lat-Long: 43.5775 N, 96.7539 W
UTM (NAD83, Z15): 196895.90, 4831798.20
Elevation: 433.1 m
Confidence: High



Wind Correlation



Station	Correlation
KSHL	0.878
KLYV	0.864
KSPW	0.842
KLRJ	0.839
KMJQ	0.834
KOTG	0.819
KEST	0.816
KYKN	0.814
KDNS	0.809
KORC	0.804
KSLB	0.797
KAXA	0.794
KHNR	0.755
KCAV	0.752
KMCW	0.746
KCBF	0.737
KCIN	0.733
KCCY	0.726
KRST	0.721
KEBS	0.720

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.9%	99.9%	90.1%	99.4%	99.9%	98.5%	99.9%	10.1%
	Q2	99.9%	99.9%	17.1%	99.1%	99.7%	97.1%	99.7%	6.2%
	Q3	99.9%	99.9%	65.6%	98.5%	99.9%	96.7%	99.9%	8.6%
	Q4	100.0%	100.0%	68.2%	98.5%	100.0%	98.4%	100.0%	12.9%
2006	Q1	98.5%	98.5%	64.9%	98.4%	98.5%	97.2%	98.5%	8.2%
	Q2	98.9%	98.9%	17.4%	98.8%	98.8%	96.2%	98.8%	10.2%
	Q3	99.5%	99.5%	16.8%	99.4%	99.4%	96.7%	99.4%	12.4%
	Q4	98.8%	98.8%	16.5%	98.7%	98.8%	98.4%	98.8%	15.8%
2007	Q1	97.2%	97.2%	15.7%	96.9%	97.2%	96.5%	97.2%	8.5%
	Q2	97.5%	97.5%	16.6%	97.5%	97.5%	95.7%	97.5%	9.9%
	Q3	97.6%	97.6%	16.6%	97.6%	97.6%	95.7%	97.6%	11.5%
	Q4	98.6%	98.6%	16.5%	98.5%	98.6%	97.7%	98.6%	15.6%
2008	Q1	96.5%	96.5%	16.8%	96.3%	96.5%	95.8%	96.5%	14.2%
	Q2	98.7%	98.7%	17.9%	98.6%	98.6%	97.1%	98.7%	10.9%
	Q3	99.3%	99.2%	16.6%	99.2%	99.3%	97.1%	99.3%	16.6%
	Q4	99.9%	99.8%	16.8%	99.8%	99.9%	99.0%	99.9%	13.1%
2009	Q1	98.6%	98.6%	16.3%	98.6%	98.6%	98.0%	98.6%	9.0%
	Q2	99.6%	99.6%	16.6%	99.5%	99.5%	97.5%	99.6%	12.0%
	Q3	99.5%	99.5%	16.3%	99.5%	99.5%	97.0%	99.5%	21.2%
	Q4	99.7%	99.7%	16.6%	99.5%	99.7%	99.0%	99.7%	15.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Spencer, IA

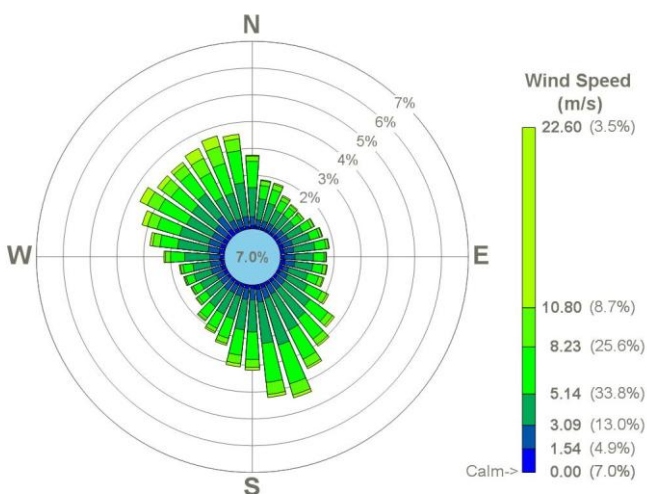
(KSPW)

Station Info

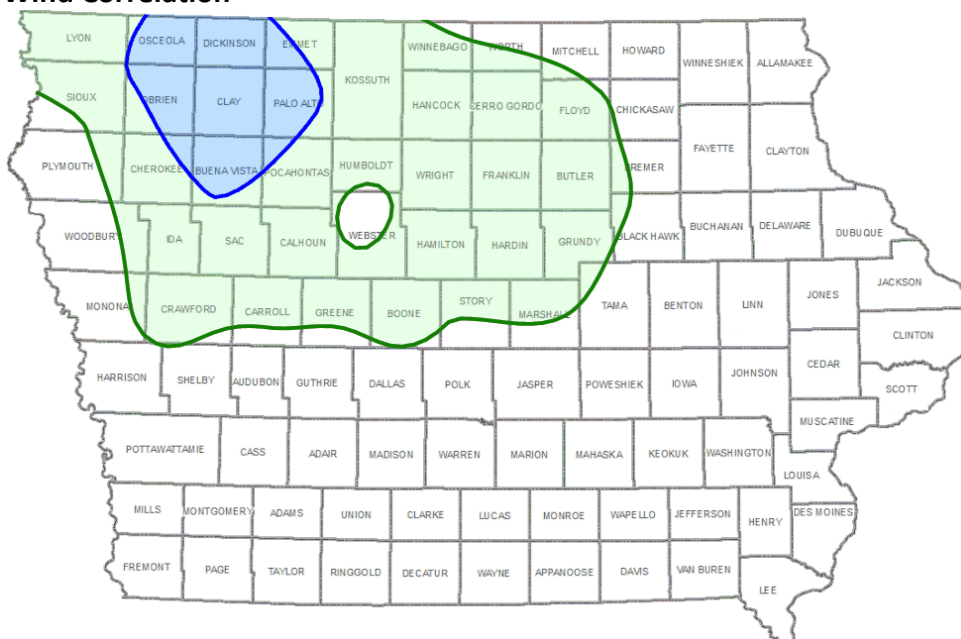
WBAN: 14972
WMO: 726500
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 11/7/2005

Location Info

Lat-Long: 43.1682 N, 95.2101 W
UTM (NAD83, Z15): 320347.62, 4781864.50
Elevation: 407.2 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KSHL	0.906
KSLB	0.902
KEST	0.897
KOTG	0.892
KAXA	0.887
KMJQ	0.883
KEBS	0.845
KFSD	0.842
KMCW	0.841
KCAV	0.841
KLYV	0.836
KCIN	0.830
KBNW	0.826
KDNS	0.817
KMIW	0.816
KORC	0.811
KCCY	0.808
KFRM	0.801
KRST	0.800
KALO	0.797

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.4%	99.4%	1.4%	97.2%	97.3%	96.8%	97.2%	4.6%
	Q2	99.8%	99.8%	2.4%	99.3%	99.3%	98.4%	99.5%	2.6%
	Q3	98.9%	98.9%	3.6%	98.7%	97.5%	96.4%	98.8%	7.2%
	Q4	98.2%	98.2%	2.5%	97.7%	97.9%	97.3%	97.7%	6.0%
2006	Q1	95.7%	95.7%	1.7%	95.6%	95.6%	95.2%	95.6%	3.8%
	Q2	98.9%	98.9%	0.9%	98.7%	98.8%	97.7%	98.8%	6.0%
	Q3	99.6%	99.6%	1.8%	98.9%	98.9%	97.6%	98.9%	10.1%
	Q4	98.0%	98.0%	0.8%	97.8%	98.0%	97.5%	97.9%	6.8%
2007	Q1	90.6%	90.6%	1.8%	90.5%	90.5%	88.2%	88.4%	3.8%
	Q2	97.5%	97.5%	2.4%	97.3%	96.2%	96.2%	97.4%	4.3%
	Q3	97.1%	97.1%	1.1%	97.0%	97.1%	95.9%	97.1%	10.9%
	Q4	98.5%	98.5%	1.0%	98.3%	98.4%	98.1%	98.4%	6.9%
2008	Q1	95.0%	95.0%	1.2%	94.6%	94.9%	94.8%	94.8%	7.6%
	Q2	96.9%	96.9%	1.6%	95.3%	95.3%	94.6%	95.4%	5.6%
	Q3	95.2%	95.2%	0.7%	95.0%	95.2%	93.1%	94.4%	12.1%
	Q4	99.6%	99.6%	0.9%	99.0%	99.5%	99.2%	99.5%	6.0%
2009	Q1	98.9%	98.9%	0.6%	95.4%	98.8%	98.6%	98.8%	5.0%
	Q2	99.6%	99.6%	0.3%	99.4%	99.5%	98.0%	99.4%	7.4%
	Q3	99.1%	99.1%	0.4%	98.9%	99.0%	97.1%	98.8%	16.8%
	Q4	99.3%	99.3%	0.8%	98.8%	99.2%	98.7%	99.0%	5.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Sterling, IL

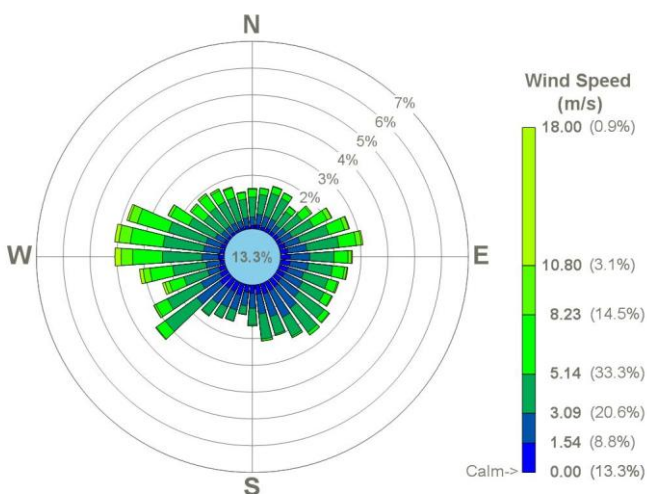
(KSQI)

Station Info

WBAN: 04894
WMO: 725326
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.7432 N, 89.6654 W
UTM (NAD83, Z15): 777289.20, 4626640.20
Elevation: 195.7 m
Confidence: Medium



Wind Correlation



Station	Correlation
KSFY	0.764
KFEP	0.748
KMLI	0.744
KCWI	0.731
KGBG	0.706
KMUT	0.692
KMXO	0.680
KIOW	0.671
KDVN	0.668
KPDC	0.668
KMQB	0.657
KAWG	0.646
KIIB	0.625
KEOK	0.623
KOOA	0.619
KFFL	0.612
KPEA	0.607
KVTI	0.585
KMPZ	0.583
KTNU	0.577

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.1%	99.1%	99.1%	98.9%	99.1%	99.1%	99.1%	10.9%
	Q2	98.9%	98.9%	98.8%	98.7%	98.8%	98.8%	98.8%	13.0%
	Q3	95.7%	95.7%	95.4%	95.2%	95.4%	95.4%	95.4%	19.4%
	Q4	97.4%	97.4%	97.3%	97.2%	97.3%	97.3%	97.3%	13.5%
2006	Q1	93.2%	93.2%	93.2%	93.2%	93.2%	93.2%	93.2%	7.9%
	Q2	97.6%	97.6%	97.6%	97.5%	97.6%	97.6%	97.6%	13.5%
	Q3	99.6%	99.6%	95.2%	93.2%	95.2%	95.2%	95.2%	19.5%
	Q4	99.0%	99.0%	98.7%	98.6%	99.0%	98.7%	98.7%	11.8%
2007	Q1	96.2%	96.2%	96.1%	91.7%	96.1%	95.0%	95.0%	11.4%
	Q2	95.1%	95.1%	95.0%	94.8%	94.9%	94.9%	94.9%	17.6%
	Q3	95.5%	95.5%	95.5%	95.4%	95.5%	95.5%	95.5%	19.2%
	Q4	96.6%	96.6%	96.6%	96.6%	96.6%	94.9%	94.9%	12.0%
2008	Q1	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	97.1%	9.9%
	Q2	99.5%	99.5%	99.5%	99.3%	99.5%	99.5%	99.5%	10.3%
	Q3	97.3%	97.3%	93.5%	97.1%	96.5%	96.6%	96.6%	19.4%
	Q4	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	11.5%
2009	Q1	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	7.0%
	Q2	86.3%	86.3%	84.2%	86.2%	84.2%	84.2%	84.2%	11.3%
	Q3	72.7%	72.7%	71.2%	72.4%	71.2%	71.2%	71.2%	15.9%
	Q4	94.4%	94.4%	94.4%	94.3%	94.4%	94.4%	94.4%	9.6%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

St. Joseph, MO

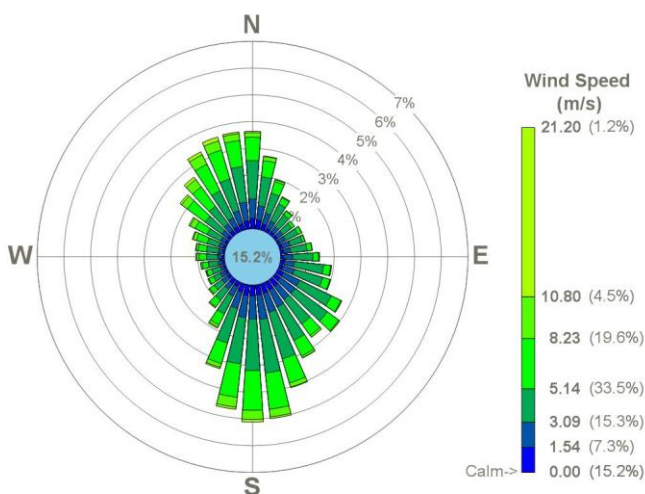
(KSTJ)

Station Info

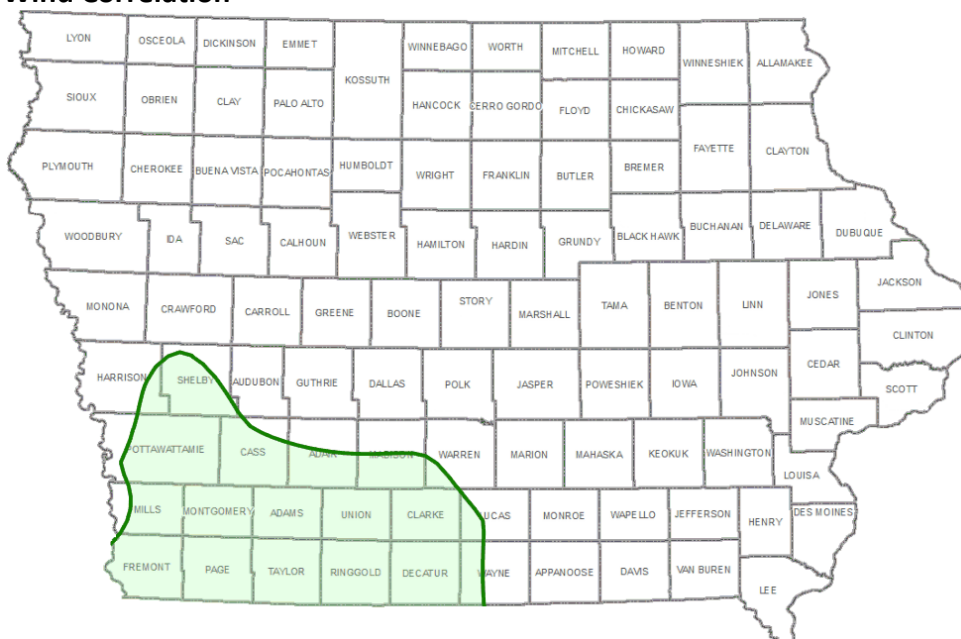
WBAN: 13993
WMO: 724490
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 3/5/2007

Location Info

Lat-Long: 39.7683 N, 94.9095 W
UTM (NAD83, Z15): 336450.53, 4403785.00
Elevation: 245.7 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KSDA	0.864
KRDK	0.863
KICL	0.859
KAFK	0.853
KCBF	0.832
KHNR	0.831
KLWD	0.829
KCSQ	0.826
KAIO	0.809
KCNC	0.797
KDSM	0.790
KDNS	0.789
KADU	0.763
KIKV	0.755
KLRJ	0.754
KTQE	0.753
KOTM	0.746
KOXV	0.744
KTNU	0.739
KFOD	0.739

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.6%	99.6%	1.3%	96.7%	99.1%	95.3%	97.5%	13.2%
	Q2	100.0%	100.0%	1.3%	98.2%	99.3%	97.1%	99.2%	9.5%
	Q3	100.0%	100.0%	0.0%	98.0%	100.0%	95.8%	99.8%	19.7%
	Q4	100.0%	100.0%	1.9%	96.4%	98.8%	98.6%	100.0%	13.3%
2006	Q1	95.7%	95.7%	1.4%	95.5%	95.6%	93.8%	95.6%	9.0%
	Q2	98.9%	98.9%	0.8%	98.9%	98.9%	95.9%	98.9%	12.3%
	Q3	99.4%	99.4%	1.3%	98.4%	98.7%	94.3%	98.7%	15.1%
	Q4	97.2%	97.2%	1.6%	97.1%	97.1%	96.1%	97.1%	12.1%
2007	Q1	97.0%	97.0%	1.8%	97.0%	97.0%	95.1%	96.5%	8.7%
	Q2	95.1%	95.1%	2.2%	95.0%	95.1%	93.6%	95.0%	13.1%
	Q3	97.1%	97.1%	1.5%	97.0%	97.1%	93.8%	95.8%	18.7%
	Q4	98.9%	98.9%	1.2%	98.7%	98.9%	98.2%	98.8%	20.3%
2008	Q1	97.7%	97.7%	2.1%	97.6%	96.7%	97.1%	97.6%	14.9%
	Q2	99.3%	99.3%	0.3%	99.2%	99.3%	97.5%	99.2%	13.0%
	Q3	98.1%	98.1%	1.4%	98.1%	98.1%	96.4%	98.1%	24.0%
	Q4	100.0%	100.0%	0.5%	100.0%	100.0%	99.5%	100.0%	17.3%
2009	Q1	98.8%	98.8%	0.2%	98.8%	98.8%	98.1%	98.8%	11.4%
	Q2	99.5%	99.5%	0.7%	99.4%	99.4%	98.3%	99.5%	15.3%
	Q3	99.5%	99.5%	1.3%	99.2%	99.3%	97.5%	99.3%	25.7%
	Q4	99.3%	99.3%	0.7%	98.4%	98.5%	98.2%	98.6%	16.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Storm Lake, IA

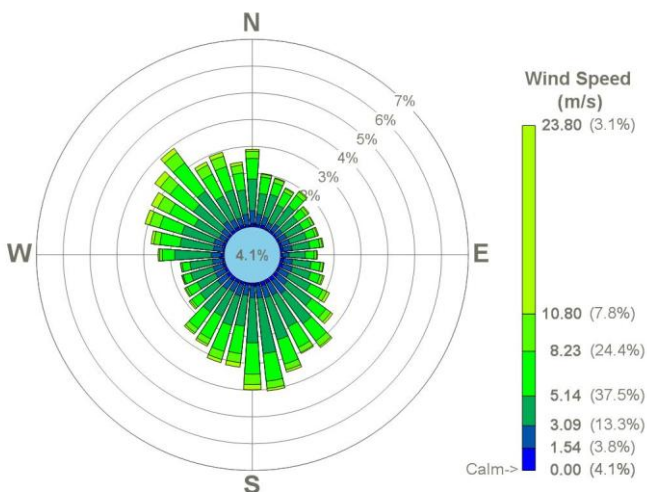
(KSLB)

Station Info

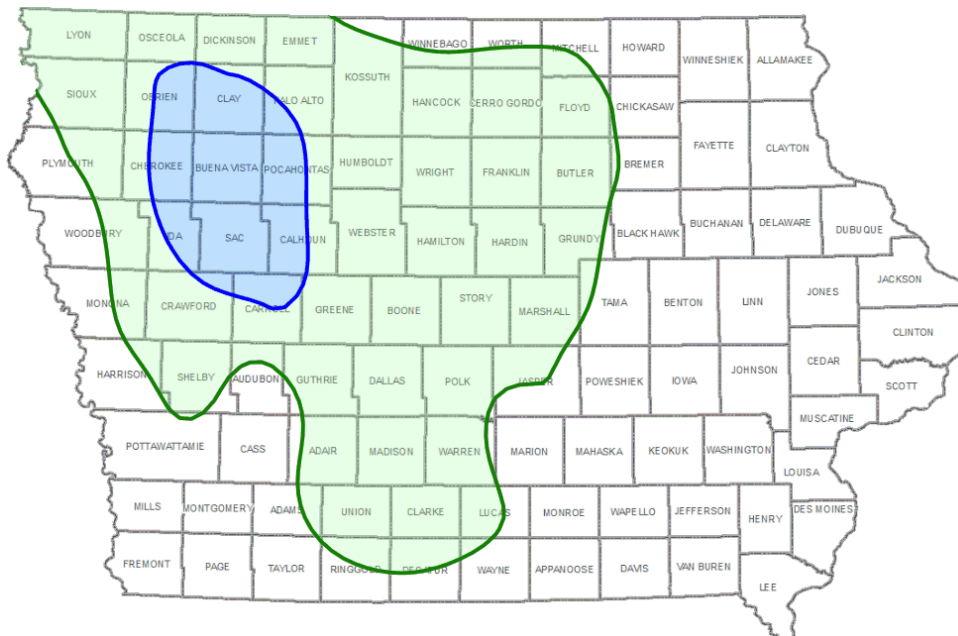
WBAN: NA
WMO: 725496
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.5972 N, 95.2399 W
UTM (NAD83, Z15): 316237.40, 4718517.96
Elevation: 449.0 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KCIN	0.907
KSPW	0.902
KSHL	0.892
KMJQ	0.872
KDNS	0.866
KAXA	0.864
KBNW	0.862
KOTG	0.860
KEST	0.854
KEBS	0.851
KCSQ	0.844
KMCW	0.841
KORC	0.832
KCAV	0.830
KDSM	0.823
KLYV	0.823
KHNR	0.822
KFOD	0.818
KMIW	0.817
KAMW	0.815

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	91.9%	91.9%	91.9%	91.7%	91.9%	91.9%	91.9%	5.2%
	Q2	92.9%	92.9%	92.8%	92.9%	92.9%	92.9%	92.9%	1.5%
	Q3	94.2%	94.2%	94.0%	94.1%	94.2%	94.2%	94.2%	6.2%
	Q4	93.3%	93.3%	93.2%	93.2%	91.7%	93.2%	93.2%	3.6%
2006	Q1	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	98.4%	2.0%
	Q2	92.9%	92.9%	92.9%	92.9%	92.9%	92.9%	92.9%	2.5%
	Q3	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%	6.2%
	Q4	94.2%	94.2%	94.2%	94.1%	94.2%	94.2%	94.2%	2.9%
2007	Q1	91.3%	91.3%	91.3%	91.2%	91.3%	91.3%	91.3%	2.1%
	Q2	95.3%	95.3%	95.3%	93.5%	95.3%	95.3%	95.3%	2.5%
	Q3	92.2%	92.2%	92.1%	92.1%	92.2%	92.2%	92.2%	5.3%
	Q4	96.9%	96.9%	96.9%	96.9%	96.9%	96.9%	96.9%	5.3%
2008	Q1	95.7%	95.7%	95.4%	95.3%	95.4%	95.4%	95.4%	4.6%
	Q2	93.3%	93.3%	93.3%	93.2%	93.3%	93.3%	93.3%	3.3%
	Q3	92.3%	92.3%	92.3%	90.1%	92.3%	92.3%	92.3%	7.6%
	Q4	97.8%	97.8%	97.8%	97.5%	97.8%	97.8%	97.8%	2.6%
2009	Q1	95.9%	95.9%	95.9%	95.9%	95.9%	95.9%	95.9%	2.5%
	Q2	91.6%	91.6%	91.6%	91.6%	91.6%	91.6%	91.6%	3.0%
	Q3	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	10.0%
	Q4	90.2%	90.2%	90.2%	90.1%	88.9%	90.2%	90.2%	3.9%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Tekamah, NE

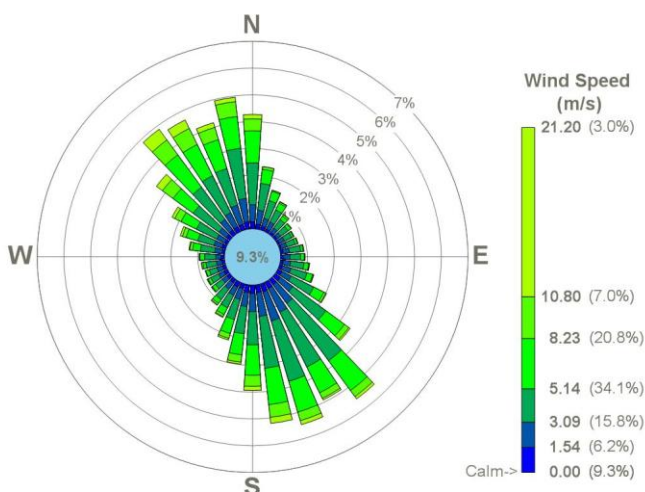
(KTQE)

Station Info

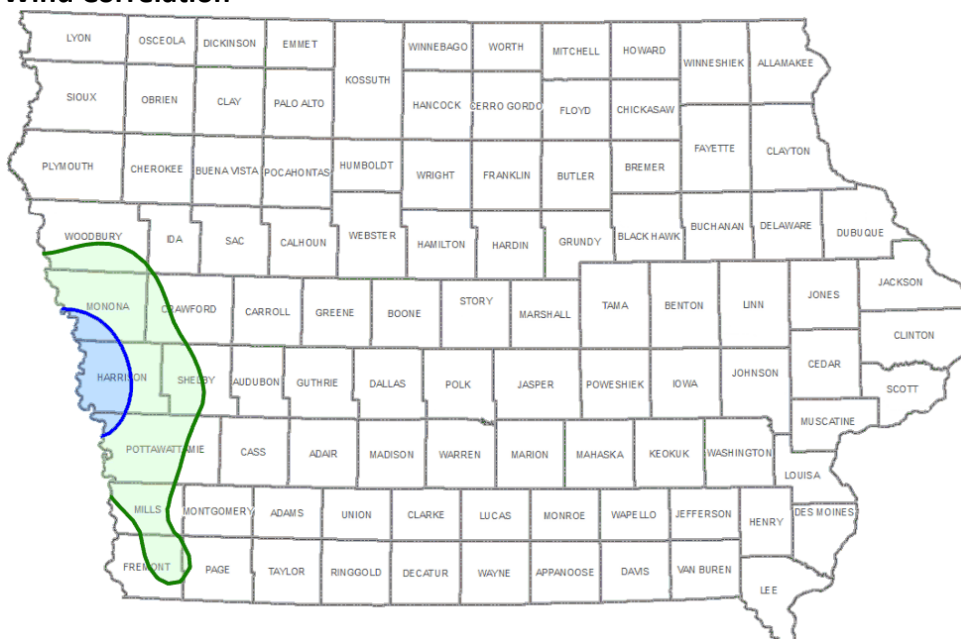
WBAN: 94978
WMO: 725527
Anemometer Height: 10.0 m
1-Min Availability Date: 3/3/2005
IFW Installation Date: 10/20/2005

Location Info

Lat-Long: 41.7631 N, 96.1798 W
UTM (NAD83, Z15): 235666.50, 4628362.20
Elevation: 312.1 m
Confidence: Medium



Wind Correlation



Station	Correlation
KOMA	0.885
KCBF	0.865
KMLE	0.846
KHNR	0.824
KSDA	0.824
KOFF	0.799
KEBS	0.795
KAXA	0.795
KAMW	0.789
KCAV	0.780
KSHL	0.777
KDSM	0.777
KSPW	0.774
KDNS	0.773
KRDk	0.771
KLYV	0.769
KLRJ	0.767
KORC	0.764
KSUX	0.763
KSLB	0.757

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.8%	99.8%	0.7%	95.0%	95.1%	93.1%	94.5%	7.4%
	Q2	99.9%	99.9%	1.1%	99.5%	99.6%	97.8%	99.6%	4.1%
	Q3	99.6%	99.6%	0.4%	97.1%	99.5%	95.1%	99.5%	10.5%
	Q4	97.4%	97.4%	1.6%	97.1%	97.1%	96.2%	97.0%	8.2%
2006	Q1	96.4%	96.4%	2.1%	96.3%	96.3%	95.5%	96.3%	5.9%
	Q2	99.2%	99.2%	1.6%	98.9%	98.9%	97.2%	98.9%	6.8%
	Q3	99.5%	99.5%	1.0%	98.4%	98.5%	96.7%	98.4%	13.0%
	Q4	97.1%	97.1%	0.4%	97.1%	97.1%	96.6%	97.0%	9.3%
2007	Q1	96.9%	96.9%	1.2%	96.9%	96.9%	96.6%	96.9%	5.4%
	Q2	96.8%	96.8%	0.9%	96.7%	96.8%	95.6%	96.7%	7.4%
	Q3	97.0%	97.0%	1.2%	96.3%	96.5%	94.8%	96.5%	14.1%
	Q4	97.7%	97.7%	0.4%	97.6%	97.7%	97.2%	97.7%	9.7%
2008	Q1	95.7%	95.7%	0.9%	95.2%	95.5%	94.9%	95.3%	8.8%
	Q2	98.0%	98.0%	2.5%	96.3%	96.8%	95.3%	96.7%	9.2%
	Q3	97.3%	97.3%	1.0%	96.8%	96.8%	95.2%	96.8%	13.4%
	Q4	99.9%	99.9%	0.3%	99.8%	99.9%	99.4%	99.9%	8.1%
2009	Q1	98.8%	98.8%	0.8%	98.7%	98.8%	98.2%	98.8%	7.5%
	Q2	98.3%	98.3%	1.1%	98.0%	97.9%	96.3%	97.9%	10.3%
	Q3	97.4%	97.4%	0.6%	97.2%	97.4%	95.1%	97.3%	19.6%
	Q4	99.2%	99.2%	1.3%	83.5%	98.6%	98.1%	98.5%	7.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Vinton, IA

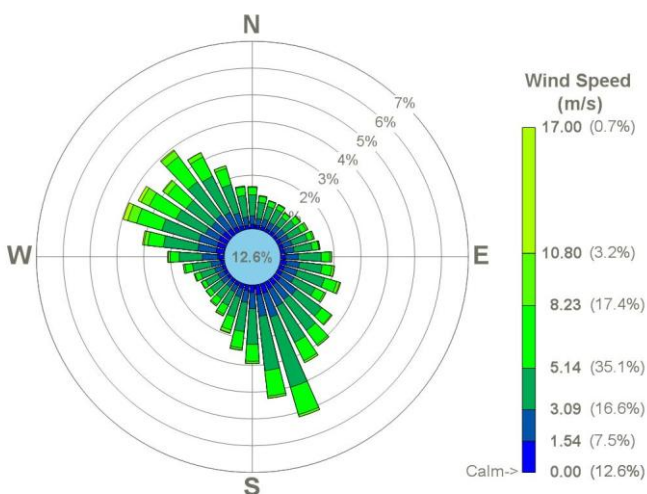
(KVTI)

Station Info

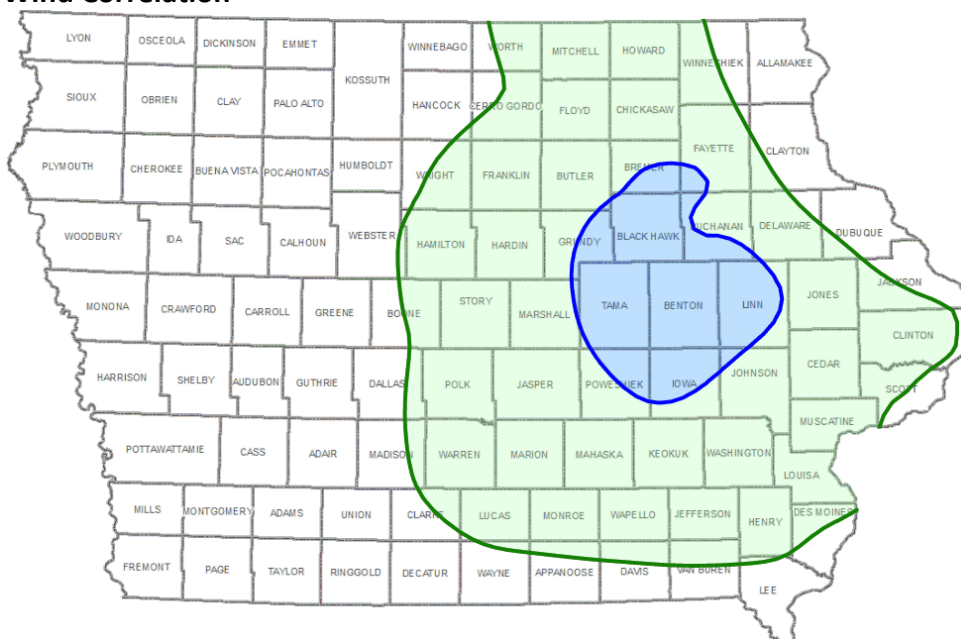
WBAN: NA
WMO: 720326
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.2176 N, 92.0248 W
UTM (NAD83, Z15): 580488.39, 4674396.85
Elevation: 254.2 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KOLZ	0.914
KCID	0.911
KALO	0.904
KMIW	0.890
KIIB	0.884
KCCY	0.881
KOOA	0.877
KMXO	0.872
KTNU	0.860
KMUT	0.859
KAWG	0.859
KAUM	0.851
KIOW	0.848
KFFL	0.845
KMPZ	0.839
KOTM	0.839
KEBS	0.838
KIKV	0.837
KDSM	0.833
KPEA	0.831

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	93.2%	93.2%	91.6%	91.5%	91.3%	91.7%	91.7%	11.7%
	Q2	88.1%	88.1%	87.8%	87.7%	87.8%	87.8%	87.8%	9.0%
	Q3	88.3%	88.3%	88.0%	87.9%	88.0%	88.0%	88.0%	19.3%
	Q4	92.3%	92.3%	91.9%	91.9%	91.1%	92.0%	92.0%	11.6%
2006	Q1	96.7%	96.7%	96.3%	96.2%	96.3%	96.3%	96.3%	6.4%
	Q2	95.7%	95.7%	95.3%	95.2%	95.3%	95.3%	95.3%	11.9%
	Q3	96.6%	96.6%	96.1%	95.9%	96.1%	96.1%	96.1%	19.1%
	Q4	95.3%	95.3%	95.2%	95.2%	95.2%	95.2%	95.2%	8.1%
2007	Q1	92.8%	92.8%	92.4%	92.3%	92.4%	92.4%	92.4%	6.6%
	Q2	93.8%	93.8%	93.6%	93.5%	93.6%	93.6%	93.6%	11.8%
	Q3	87.0%	87.0%	86.8%	86.6%	86.8%	86.8%	86.8%	19.1%
	Q4	95.2%	95.2%	94.2%	94.2%	94.2%	94.2%	94.2%	8.3%
2008	Q1	92.0%	92.0%	89.7%	89.6%	89.1%	90.0%	90.0%	8.5%
	Q2	94.8%	94.8%	94.1%	94.0%	94.1%	94.6%	94.6%	10.9%
	Q3	90.4%	90.4%	90.1%	90.0%	90.1%	90.3%	90.3%	22.5%
	Q4	96.6%	96.6%	96.0%	95.9%	95.9%	96.2%	96.2%	9.8%
2009	Q1	93.5%	93.5%	93.3%	93.1%	91.9%	93.3%	93.3%	6.3%
	Q2	98.5%	98.5%	98.1%	98.0%	98.1%	98.4%	98.4%	14.8%
	Q3	95.4%	95.4%	95.2%	95.0%	95.2%	95.4%	95.4%	27.5%
	Q4	94.3%	94.3%	93.8%	90.7%	93.8%	94.0%	94.0%	8.3%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Washington, IA

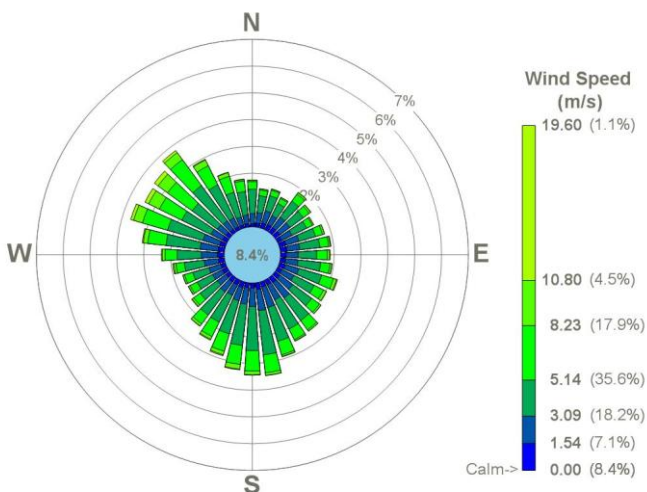
(KAWG)

Station Info

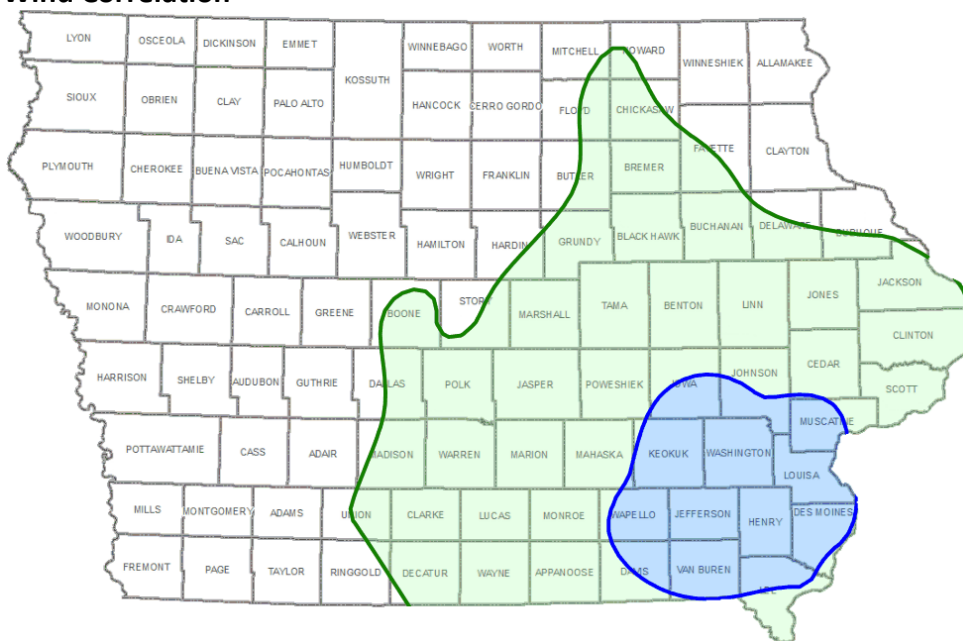
WBAN: NA
WMO: 725454
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 41.2752 N, 91.6750 W
UTM (NAD83, Z15): 610971.05, 4570154.14
Elevation: 228.9 m
Confidence: Medium



Wind Correlation



Station Correlation

Station	Correlation
KFFL	0.953
KMPZ	0.937
KOTM	0.911
KMUT	0.910
KFSW	0.901
KMQB	0.895
KOOA	0.895
KBRL	0.893
KOXV	0.892
KIOW	0.891
KDVN	0.884
KCID	0.882
KCNC	0.877
KTNU	0.877
KEOK	0.865
KGBG	0.862
KUIN	0.859
KVTI	0.859
KMXO	0.852
KCWI	0.846

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	10.1%
	Q2	93.8%	93.8%	93.7%	93.8%	93.8%	93.8%	93.8%	5.9%
	Q3	80.6%	80.6%	80.4%	80.3%	80.6%	80.6%	80.6%	13.6%
	Q4	88.2%	88.2%	88.2%	88.1%	88.2%	88.2%	88.2%	6.4%
2006	Q1	96.4%	96.4%	96.4%	96.3%	96.4%	96.4%	96.4%	3.7%
	Q2	86.4%	86.4%	86.3%	86.2%	86.4%	86.4%	86.4%	6.3%
	Q3	95.1%	95.1%	95.0%	94.7%	95.1%	95.1%	95.1%	11.7%
	Q4	88.5%	88.5%	88.5%	88.5%	88.5%	88.5%	88.5%	4.3%
2007	Q1	91.1%	91.1%	91.1%	91.0%	91.1%	91.1%	91.1%	4.0%
	Q2	92.9%	92.9%	92.9%	92.9%	92.9%	92.9%	92.9%	7.4%
	Q3	89.3%	89.3%	89.3%	89.1%	89.3%	89.3%	89.3%	13.4%
	Q4	96.7%	96.7%	96.7%	96.7%	96.7%	96.7%	96.7%	8.3%
2008	Q1	95.3%	95.3%	95.3%	95.1%	95.3%	95.3%	95.3%	6.3%
	Q2	94.8%	94.8%	94.8%	94.8%	94.8%	94.8%	94.8%	5.3%
	Q3	91.3%	91.3%	91.3%	88.6%	91.3%	91.3%	91.3%	15.5%
	Q4	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	96.0%	10.0%
2009	Q1	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	3.9%
	Q2	96.0%	96.0%	95.9%	95.9%	96.0%	96.0%	96.0%	8.2%
	Q3	94.2%	94.2%	94.2%	94.2%	93.8%	94.2%	94.2%	16.3%
	Q4	97.1%	97.1%	97.1%	97.0%	97.1%	97.1%	97.1%	7.0%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Waterloo, IA

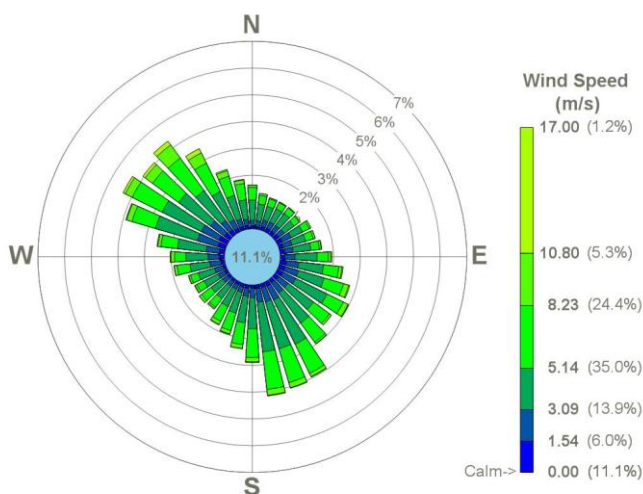
(KALO)

Station Info

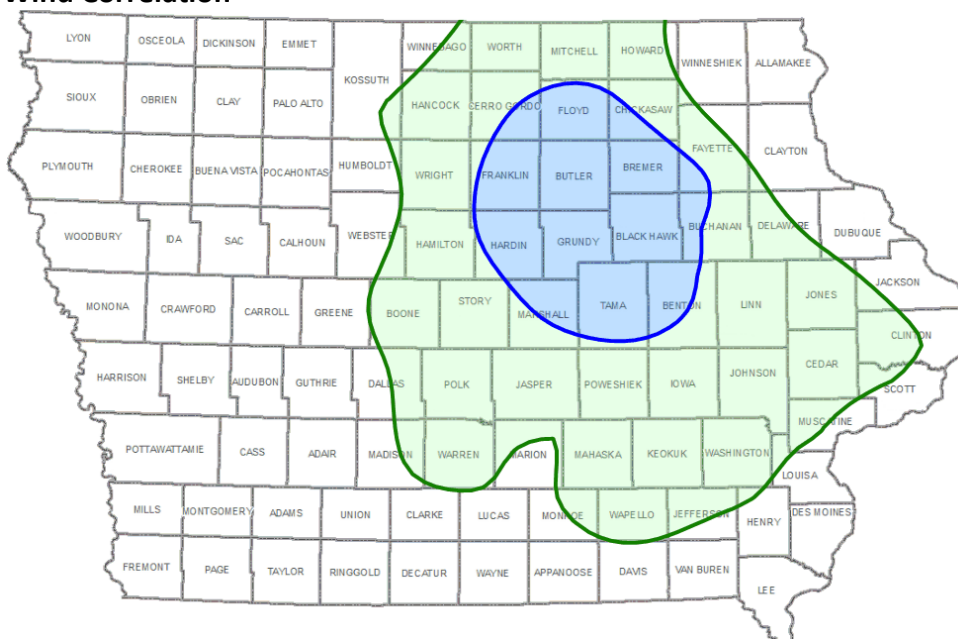
WBAN: 94910
WMO: 725480
Anemometer Height: 10.0 m
1-Min Availability Date: 1/1/2000
IFW Installation Date: 6/25/2007

Location Info

Lat-Long: 42.5650 N, 92.4078 W
UTM (NAD83, Z15): 548608.43, 4712680.55
Elevation: 265.2 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KMIW	0.928
KOLZ	0.926
KCCY	0.917
KVTI	0.904
KIIB	0.898
KMCW	0.880
KCID	0.875
KCAV	0.858
KEBS	0.854
KOTM	0.844
KTNU	0.843
KBNW	0.842
KOOA	0.840
KDSM	0.838
KAUM	0.830
KAMW	0.829
KRST	0.825
KMXO	0.824
KIKV	0.813
KFKA	0.811

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.7%	99.7%	17.2%	98.5%	99.7%	98.3%	99.1%	10.8%
	Q2	100.0%	100.0%	17.2%	99.2%	99.8%	97.6%	99.8%	8.4%
	Q3	98.8%	98.8%	45.4%	96.2%	97.7%	95.4%	98.6%	14.3%
	Q4	99.1%	99.1%	22.3%	90.5%	98.9%	97.7%	98.6%	10.7%
2006	Q1	94.9%	94.9%	64.3%	94.2%	94.8%	94.3%	94.8%	4.7%
	Q2	99.0%	99.0%	17.3%	98.9%	98.8%	96.7%	98.9%	9.8%
	Q3	99.5%	99.5%	17.0%	99.5%	99.4%	96.8%	99.5%	12.5%
	Q4	98.8%	98.8%	16.4%	98.6%	98.8%	98.1%	98.7%	7.0%
2007	Q1	98.0%	98.0%	16.5%	97.9%	97.4%	96.6%	97.2%	4.4%
	Q2	98.4%	98.4%	17.4%	98.1%	98.4%	96.4%	98.2%	8.3%
	Q3	97.6%	97.6%	16.6%	97.4%	97.6%	96.2%	97.5%	17.2%
	Q4	98.8%	98.8%	16.8%	98.4%	98.7%	98.4%	98.6%	8.7%
2008	Q1	92.5%	92.5%	16.2%	92.4%	92.5%	92.3%	92.4%	9.6%
	Q2	98.5%	98.5%	16.7%	98.4%	98.5%	96.9%	98.3%	10.6%
	Q3	94.8%	94.8%	16.4%	94.2%	94.7%	92.5%	94.6%	18.3%
	Q4	99.6%	99.6%	16.5%	99.4%	99.5%	99.1%	99.5%	11.1%
2009	Q1	98.9%	98.9%	16.5%	98.8%	98.9%	98.1%	98.2%	9.3%
	Q2	98.5%	98.5%	16.6%	98.4%	98.3%	97.0%	98.4%	12.5%
	Q3	99.6%	99.6%	16.7%	99.5%	99.6%	97.1%	99.1%	24.5%
	Q4	99.4%	99.4%	16.8%	99.2%	99.4%	99.1%	99.3%	8.5%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Webster City, IA

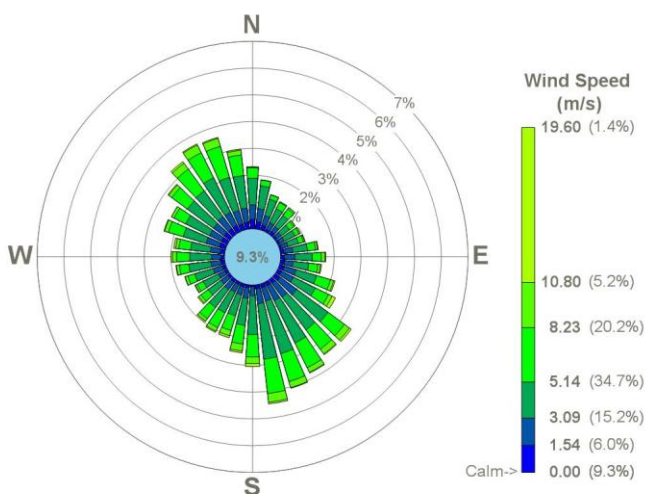
(KEBS)

Station Info

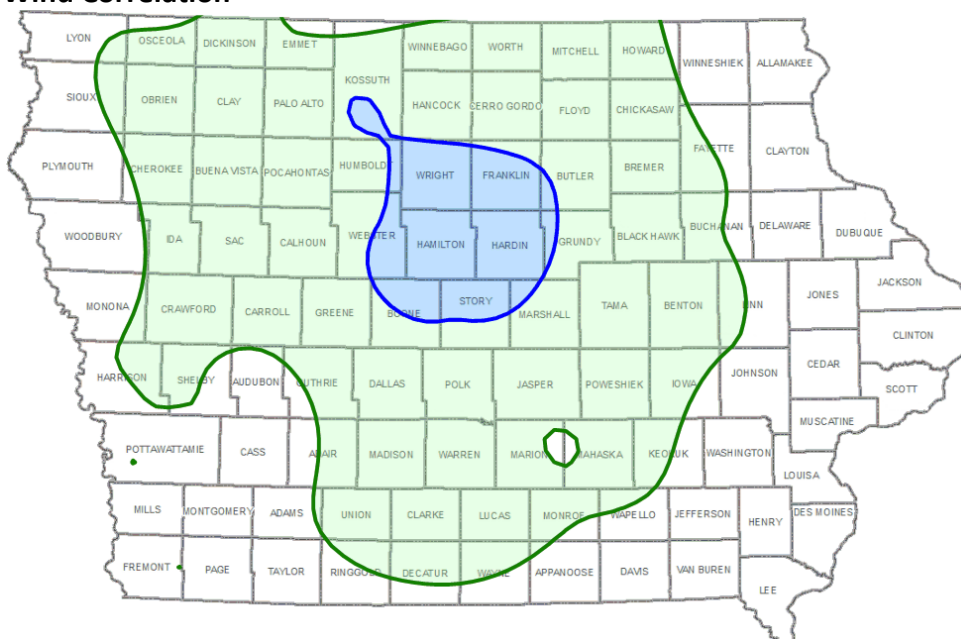
WBAN: NA
WMO: 725478
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.4392 N, 93.8691 W
UTM (NAD83, Z15): 428520.02, 4698907.82
Elevation: 338.9 m
Confidence: High



Wind Correlation



Station Correlation

Station	Correlation
KCAV	0.916
KAXA	0.909
KBNW	0.908
KAMW	0.897
KMIW	0.886
KCCY	0.880
KDSM	0.873
KIKV	0.872
KTNU	0.864
KOLZ	0.860
KFOD	0.859
KALO	0.854
KSLB	0.851
KMCW	0.850
KSPW	0.845
KVTI	0.838
KCNC	0.834
KCSQ	0.834
KCIN	0.833
KSHL	0.826

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	91.8%	91.8%	91.7%	91.7%	91.7%	91.7%	91.7%	5.3%
	Q2	90.3%	90.3%	90.3%	90.3%	90.3%	90.3%	90.3%	5.7%
	Q3	90.1%	90.1%	90.1%	88.2%	90.1%	90.1%	90.1%	14.8%
	Q4	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	6.8%
2006	Q1	95.4%	95.4%	95.4%	95.3%	95.4%	95.4%	95.4%	4.9%
	Q2	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	6.3%
	Q3	96.3%	96.3%	96.3%	96.1%	96.3%	96.3%	96.3%	13.1%
	Q4	90.0%	90.0%	90.0%	89.9%	90.0%	90.0%	90.0%	4.7%
2007	Q1	91.9%	91.9%	91.9%	91.6%	91.9%	91.9%	91.9%	16.3%
	Q2	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	4.6%
	Q3	88.3%	88.3%	88.3%	88.1%	88.3%	88.3%	88.3%	12.0%
	Q4	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	5.4%
2008	Q1	84.3%	84.3%	84.3%	83.4%	84.3%	84.3%	84.3%	7.3%
	Q2	91.6%	91.6%	91.6%	91.5%	91.6%	91.6%	91.6%	6.7%
	Q3	93.9%	93.9%	93.9%	93.9%	93.9%	93.9%	93.9%	17.2%
	Q4	85.6%	85.6%	85.6%	85.6%	85.6%	85.6%	85.6%	9.0%
2009	Q1	92.8%	92.8%	92.8%	92.6%	92.8%	92.8%	92.8%	6.9%
	Q2	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%	8.6%
	Q3	95.2%	95.2%	95.2%	95.2%	95.2%	95.2%	95.2%	23.1%
	Q4	97.9%	97.9%	97.6%	97.4%	97.6%	97.6%	97.6%	7.8%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Worthington, MN

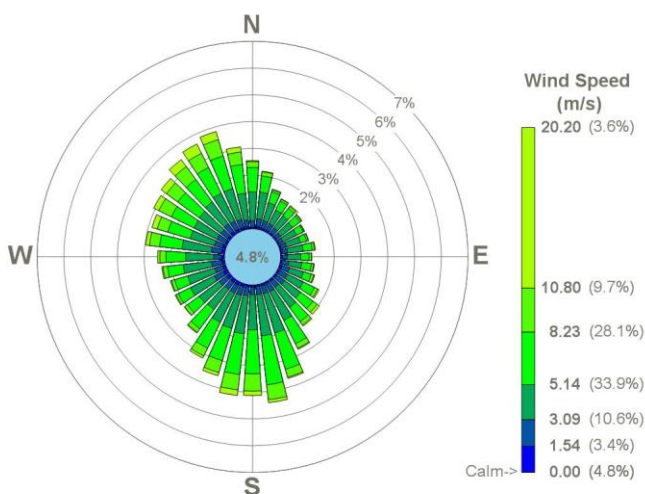
(KOTG)

Station Info

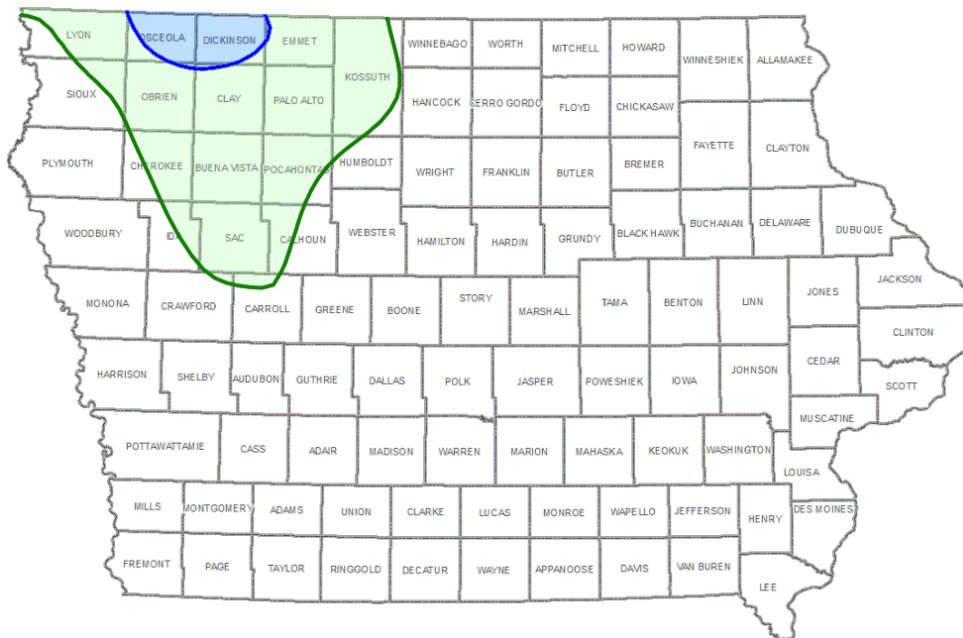
WBAN: 94927
WMO: 726587
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 43.6525 N, 95.5758 W
UTM (NAD83, Z15): 292282.63, 4836502.07
Elevation: 477.3 m
Confidence: Medium



Wind Correlation



Station	Correlation
KEST	0.895
KSPW	0.892
KMJQ	0.890
KSHL	0.870
KFRM	0.860
KSLB	0.860
KAXA	0.838
KFSD	0.819
KRST	0.816
KLYV	0.812
KCIN	0.794
KMCW	0.785
KDNS	0.776
KORC	0.755
KEBS	0.752
KLRJ	0.749
KCAV	0.735
KBNW	0.732
KCSQ	0.732
KFOD	0.725

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.4%	99.4%	95.4%	95.3%	94.4%	94.9%	94.9%	6.5%
	Q2	99.3%	99.3%	99.2%	99.2%	98.8%	99.2%	99.2%	2.5%
	Q3	96.4%	96.4%	96.4%	96.2%	96.4%	96.4%	96.4%	5.4%
	Q4	94.5%	94.5%	90.2%	94.4%	86.4%	89.6%	89.6%	3.6%
2006	Q1	99.4%	99.4%	98.8%	98.8%	98.8%	98.8%	98.8%	5.8%
	Q2	99.0%	99.0%	98.9%	98.9%	99.0%	99.0%	99.0%	3.5%
	Q3	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	5.8%
	Q4	97.1%	97.1%	89.7%	89.6%	89.6%	88.8%	88.8%	5.9%
2007	Q1	97.9%	97.9%	76.2%	76.0%	76.1%	76.2%	76.2%	1.8%
	Q2	98.3%	98.3%	89.3%	89.1%	89.3%	89.3%	89.3%	2.8%
	Q3	96.9%	96.9%	96.6%	96.9%	94.7%	96.4%	96.4%	7.0%
	Q4	80.9%	80.9%	80.9%	80.8%	80.9%	80.9%	80.9%	5.4%
2008	Q1	97.2%	97.2%	94.0%	93.2%	95.3%	96.0%	96.0%	3.8%
	Q2	99.5%	99.5%	97.6%	97.4%	97.6%	97.6%	97.6%	6.4%
	Q3	99.4%	99.4%	99.4%	99.4%	99.3%	99.4%	99.4%	6.6%
	Q4	100.0%	100.0%	100.0%	100.0%	97.5%	100.0%	100.0%	2.4%
2009	Q1	98.2%	98.2%	97.8%	97.4%	97.7%	97.8%	97.8%	2.2%
	Q2	98.9%	98.9%	95.6%	95.6%	95.6%	95.7%	95.7%	4.4%
	Q3	98.6%	98.6%	97.4%	96.8%	98.2%	97.9%	97.9%	8.9%
	Q4	89.2%	89.2%	88.8%	88.5%	87.9%	88.8%	88.8%	4.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Yankton, SD

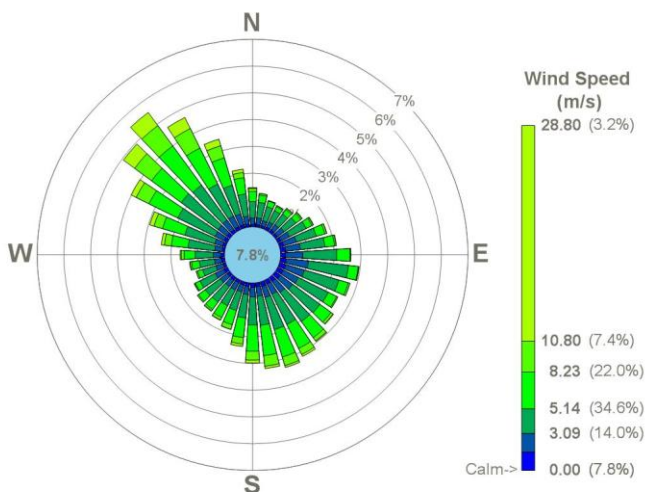
(KYKN)

Station Info

WBAN: 94911
WMO: 726525
Anemometer Height: Unknown
1-Min Availability Date: NA
IFW Installation Date: NA

Location Info

Lat-Long: 42.9142 N, 97.3805 W
UTM (NAD83, Z15): 142430.50, 4760603.50
Elevation: 387.4 m
Confidence: High



Wind Correlation



Station	Correlation
KSUX	0.837
KFSD	0.814
KSHL	0.802
KORC	0.789
KSPW	0.774
KMJQ	0.770
KSLB	0.764
KLYV	0.754
KOFF	0.751
KCIN	0.748
KDNS	0.739
KCAV	0.726
KEST	0.725
KMIW	0.723
KBNW	0.722
KDSM	0.720
KMCW	0.720
KLRJ	0.719
KAMW	0.713
KOTG	0.712

ISH Data Inventory

Year	Period	OBS	PRCP	PRES	CCVR	TMPD	WDIR*	WSPD*	Calms
2005	Q1	99.1%	99.1%	99.0%	99.0%	98.3%	99.0%	99.0%	10.3%
	Q2	93.7%	93.7%	93.7%	93.1%	93.7%	93.7%	93.7%	3.5%
	Q3	94.6%	94.6%	89.9%	89.8%	89.9%	89.9%	89.9%	8.7%
	Q4	98.7%	98.7%	98.0%	98.0%	98.0%	98.0%	98.0%	10.6%
2006	Q1	99.4%	99.4%	99.3%	99.3%	99.2%	99.3%	99.3%	7.0%
	Q2	99.1%	99.1%	99.0%	98.9%	99.0%	99.0%	99.0%	5.9%
	Q3	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	97.3%	8.7%
	Q4	71.7%	71.7%	71.6%	71.6%	70.5%	71.6%	71.6%	8.0%
2007	Q1	97.8%	97.8%	97.8%	97.8%	97.5%	97.8%	97.8%	5.6%
	Q2	94.8%	94.8%	94.7%	94.2%	94.6%	94.3%	94.3%	5.6%
	Q3	90.1%	90.1%	84.2%	83.5%	84.2%	84.1%	84.1%	6.1%
	Q4	73.8%	73.8%	73.8%	73.7%	73.5%	73.3%	73.3%	10.9%
2008	Q1	97.1%	97.1%	97.1%	97.0%	97.0%	97.1%	97.1%	9.7%
	Q2	96.7%	96.7%	96.7%	96.4%	96.6%	96.6%	96.6%	5.4%
	Q3	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	9.1%
	Q4	100.0%	100.0%	100.0%	100.0%	99.7%	100.0%	100.0%	8.5%
2009	Q1	98.2%	98.2%	98.2%	98.0%	98.0%	98.2%	98.2%	4.5%
	Q2	98.5%	98.5%	98.5%	98.4%	98.5%	98.5%	98.5%	7.6%
	Q3	99.8%	99.8%	99.8%	99.8%	99.8%	99.7%	99.7%	11.6%
	Q4	98.6%	98.6%	98.6%	98.6%	98.1%	98.2%	98.2%	8.2%

* If available, 1-minute wind data may be used to supplement the ISH data to fulfill the 90% completeness requirement.

Appendix B – Comparison of Model Results by Location

This appendix contains an analysis comparing model results using the previous 2000 – 2004 AERMOD meteorological data to the new 2005 – 2009 AERMOD meteorological data. The results are represented in terms of the average ratio of new model results to old (values greater than one indicating an average increase in model concentration due to the change in meteorological data, and values less than one indicated an average decrease). In each chart, solid lines represent the average change for the various source types (listed in the key at the bottom of each page). In certain areas of the state, the meteorological station may have also changed. In these cases, a series of dashed lines are also shown. The dashed lines indicate what the average change in model result would have been had the representative meteorological station not changed.

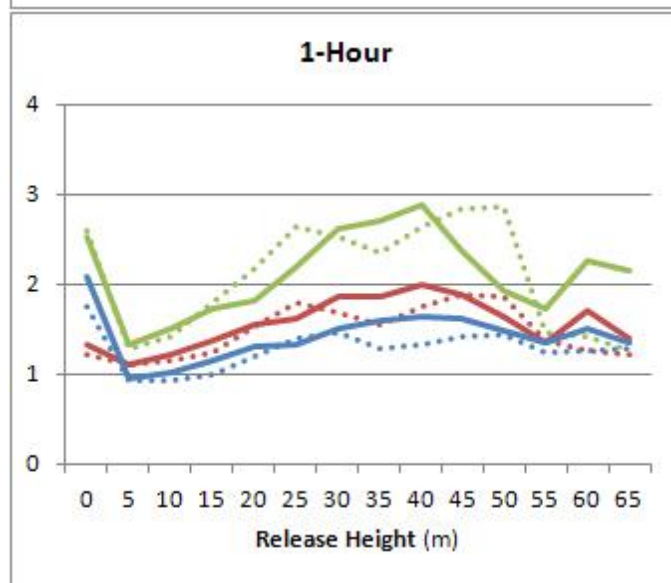
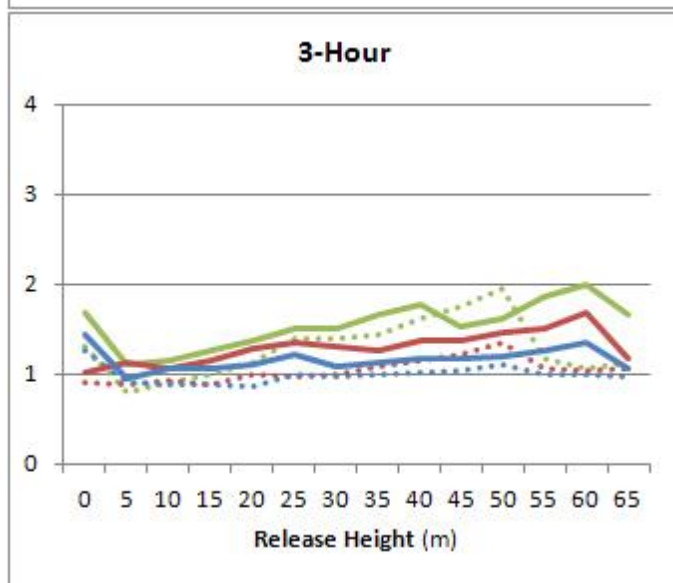
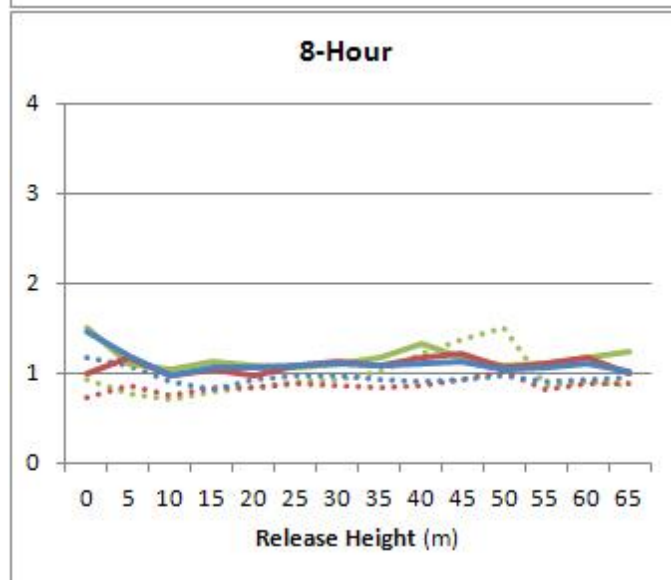
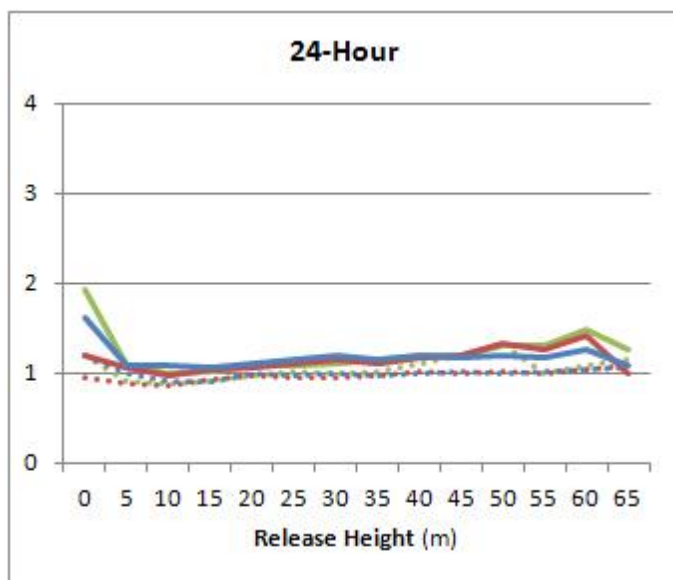
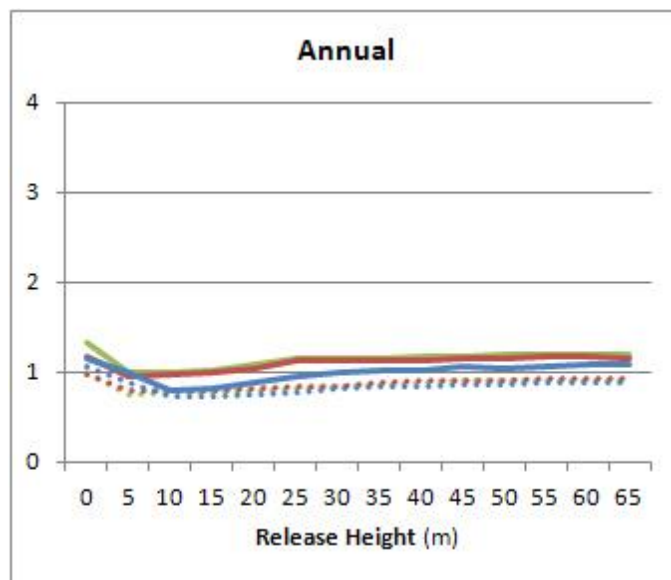
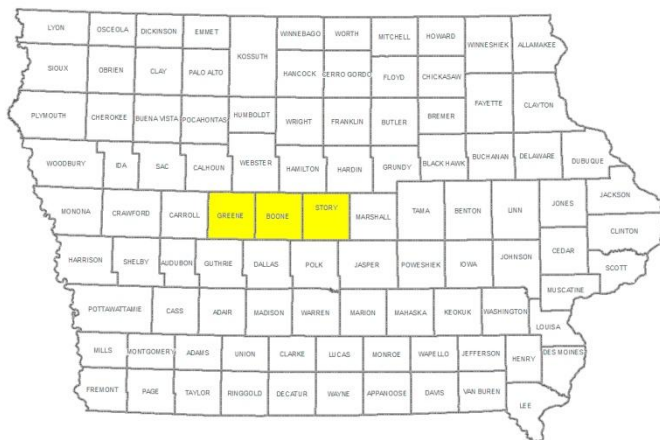
Unlike the comparison of model results presented in the main body of this document, all combinations of source type, release height and averaging period are shown. Therefore, some of the data presented herein may not be realistic for real-world applications.

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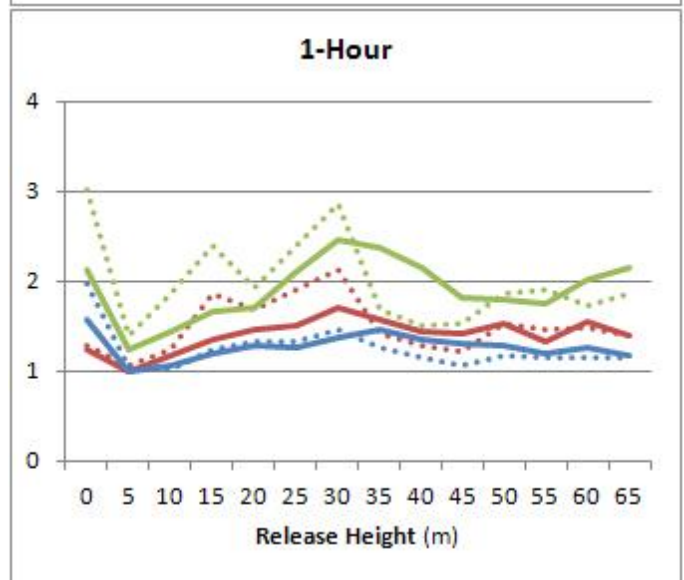
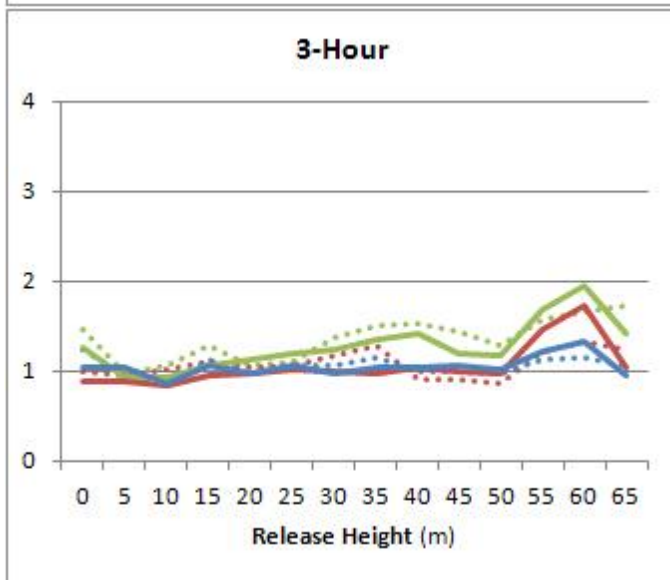
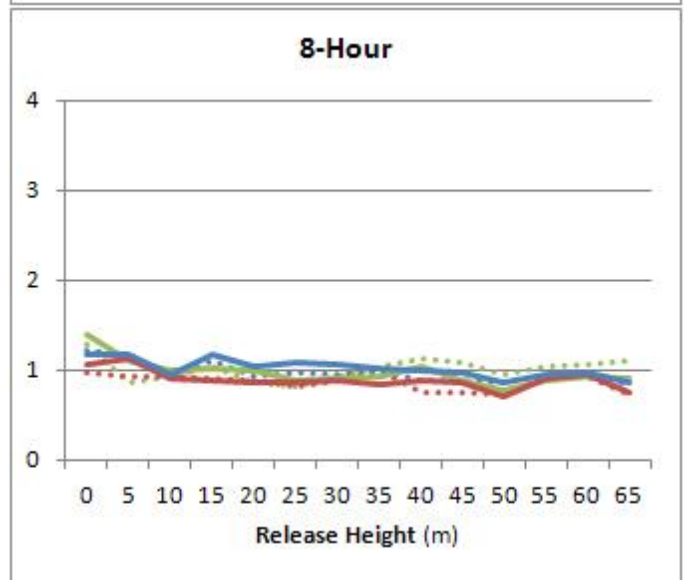
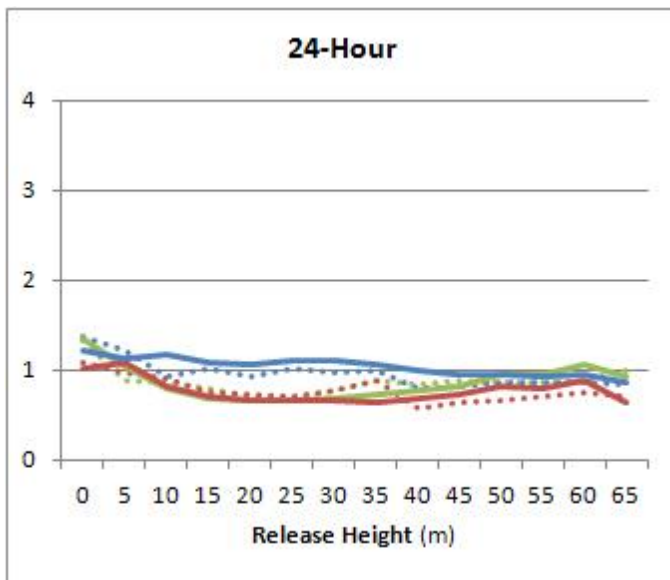
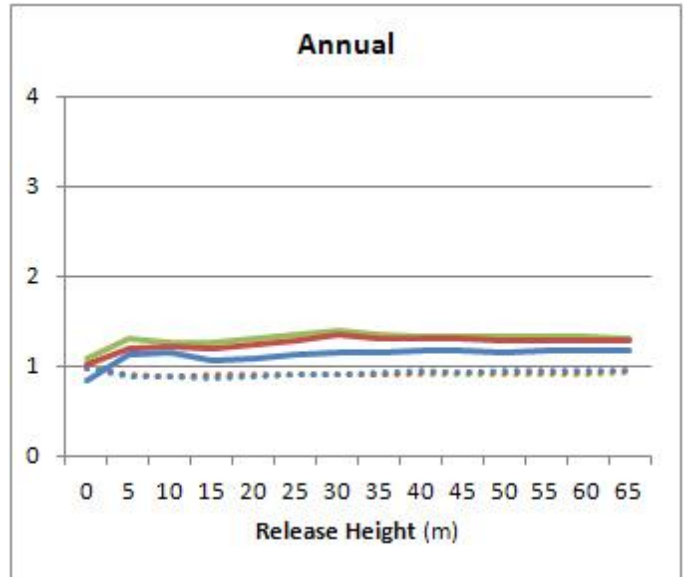
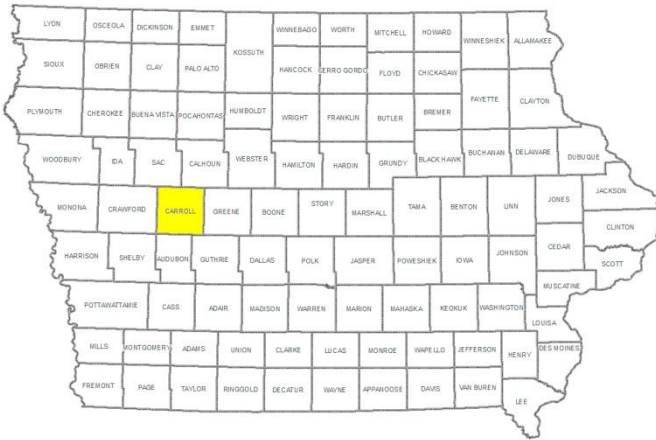
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 Old Representative Site: Des Moines



Source Type

— Point — Volume — Area

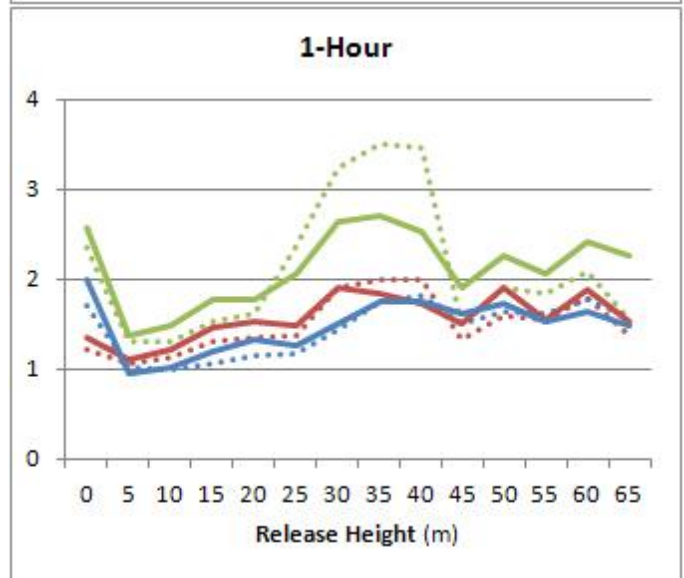
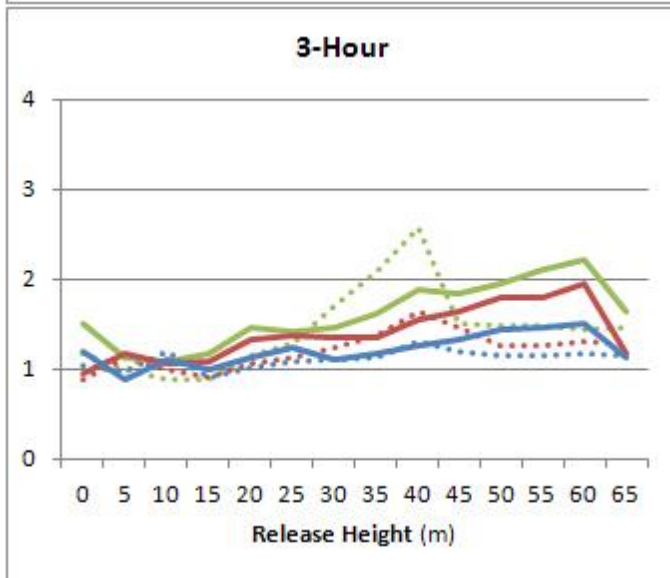
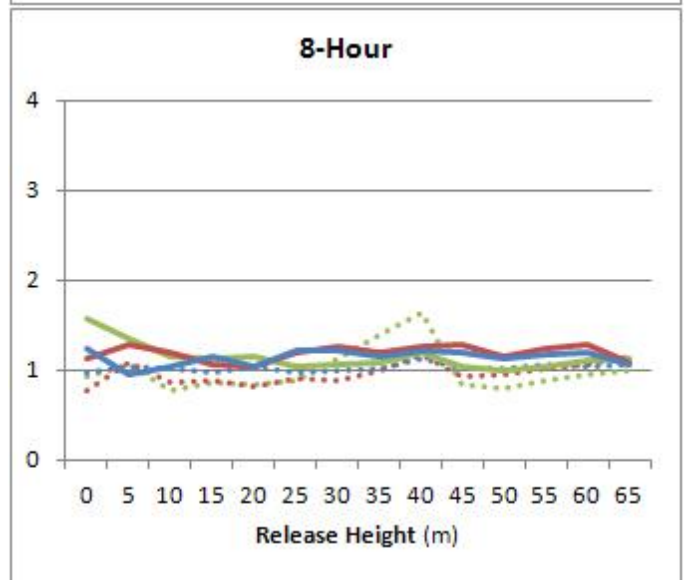
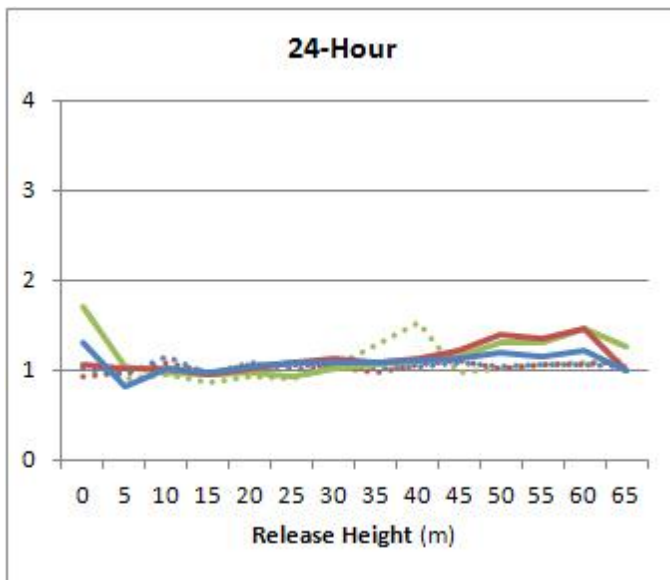
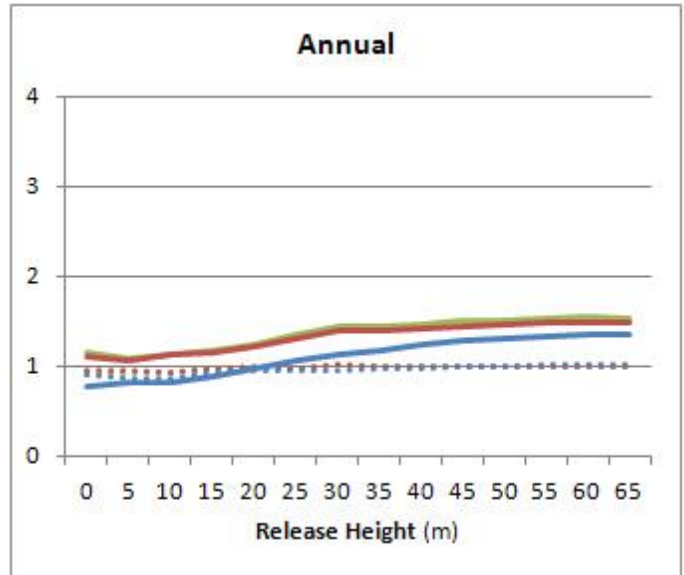
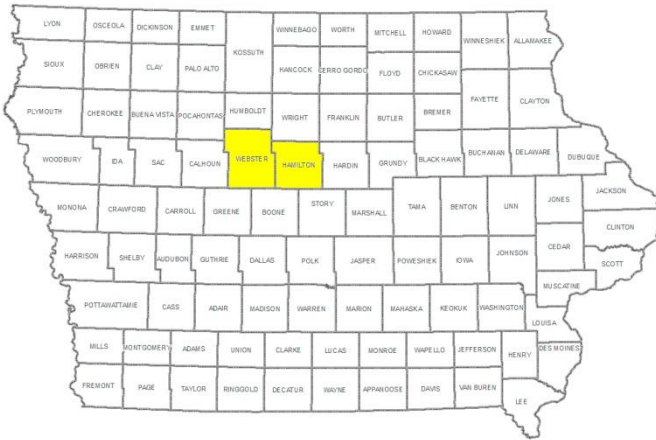
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 Old Representative Site: Sioux Falls



Source Type
 Point Volume Area

New Representative Site: Ames

Old Representative Site: Mason City

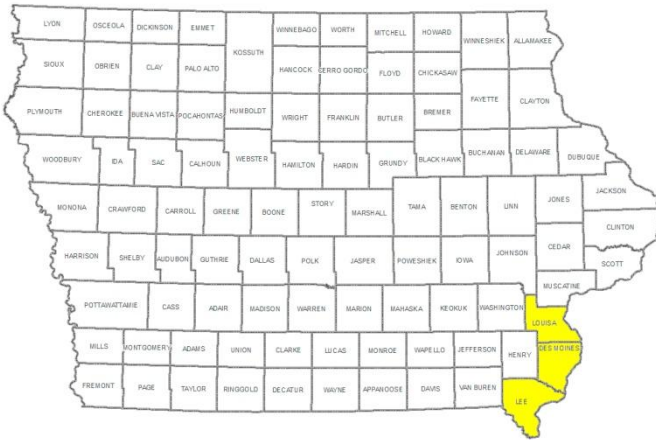


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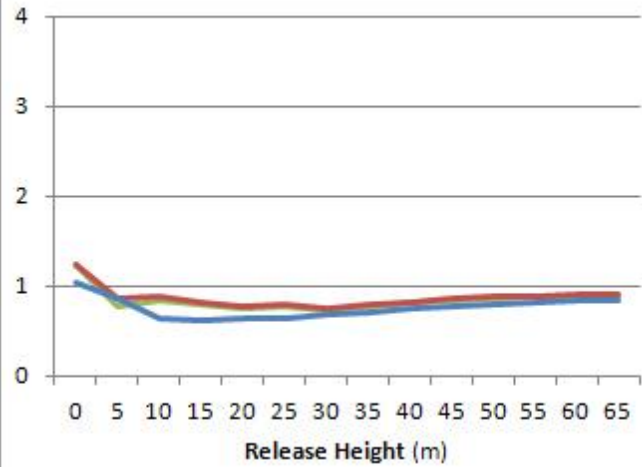
Point Volume Area

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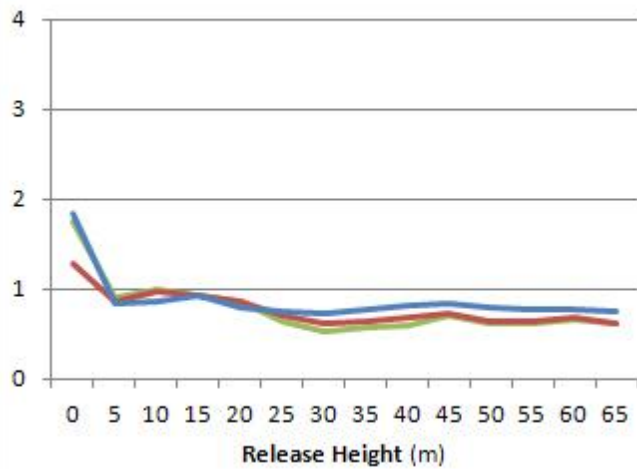
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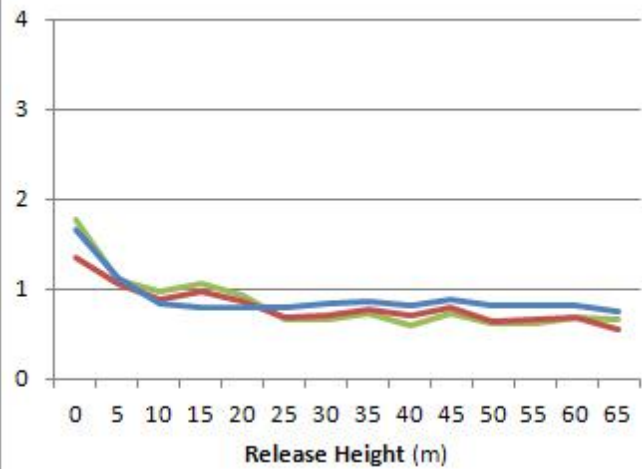
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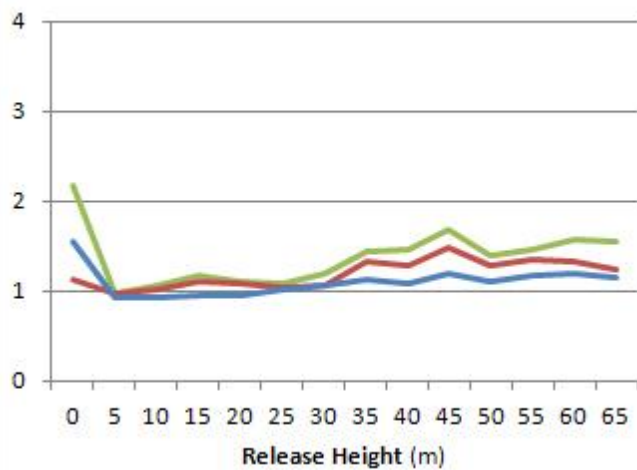
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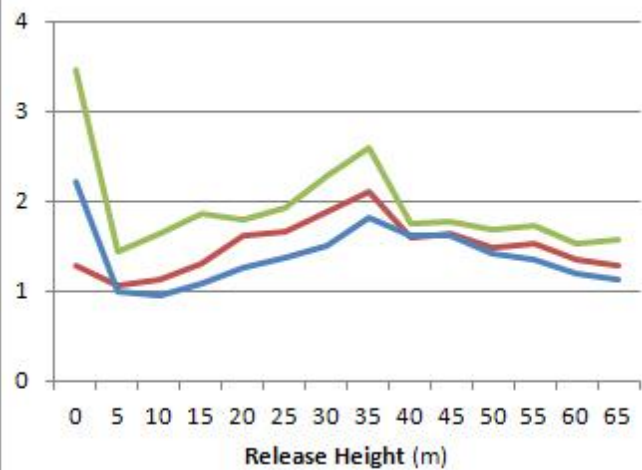
8-Hour



3-Hour



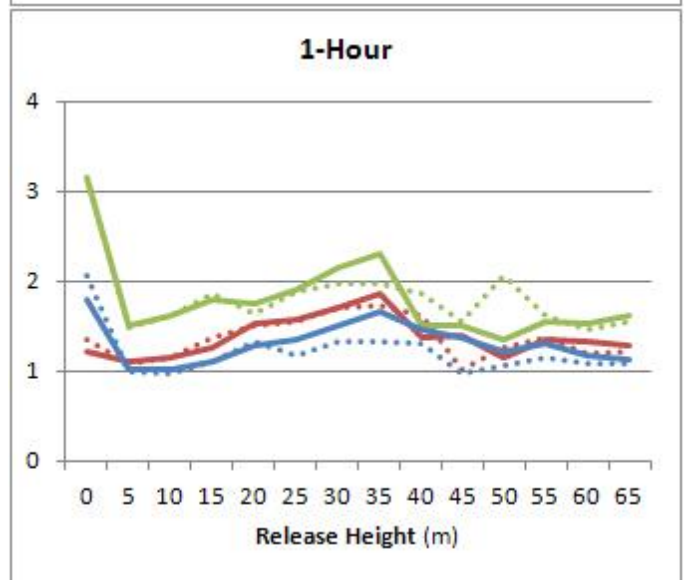
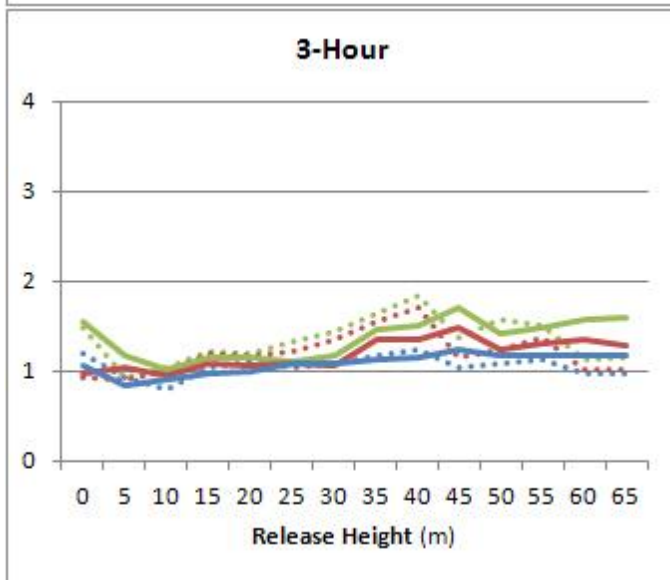
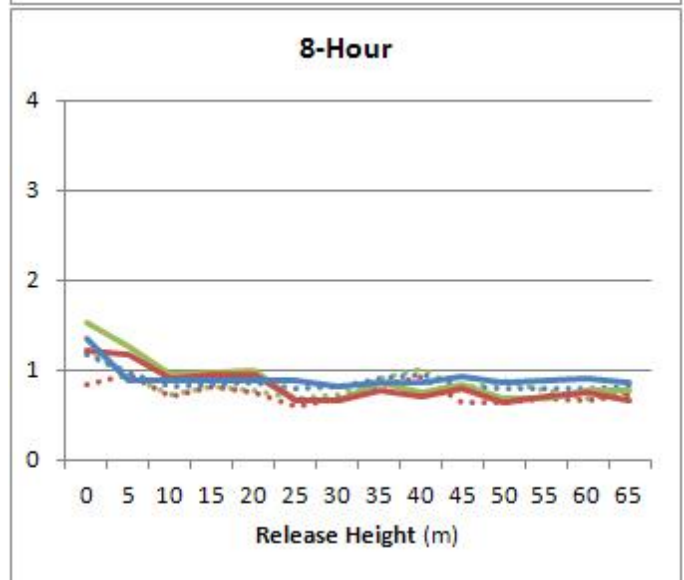
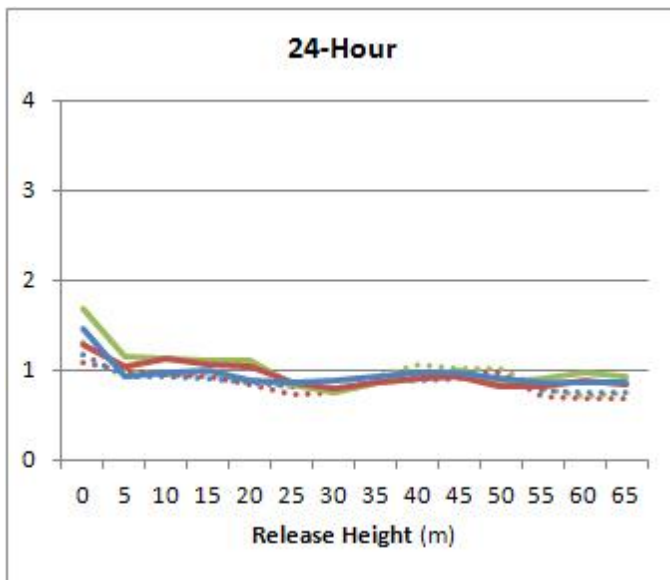
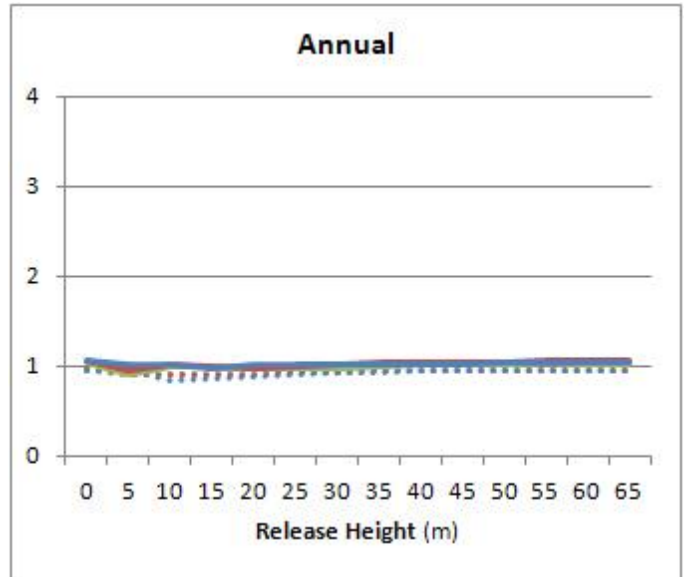
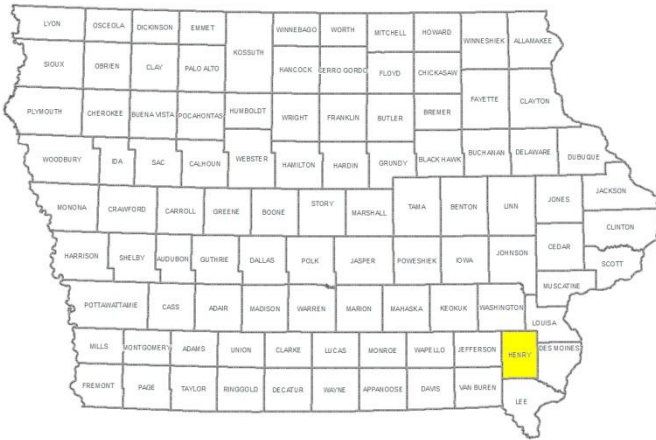
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Source Type

Point Volume Area

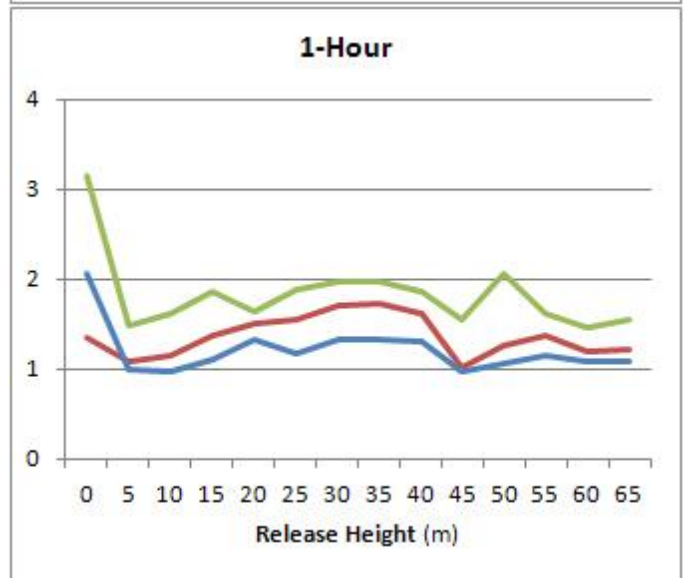
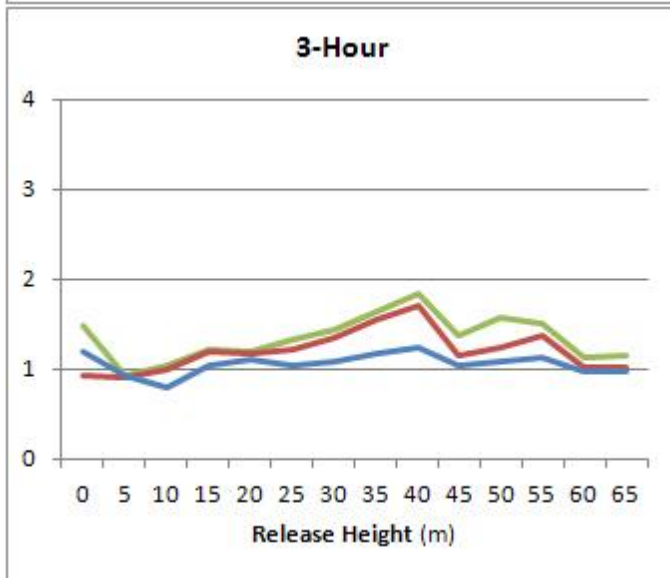
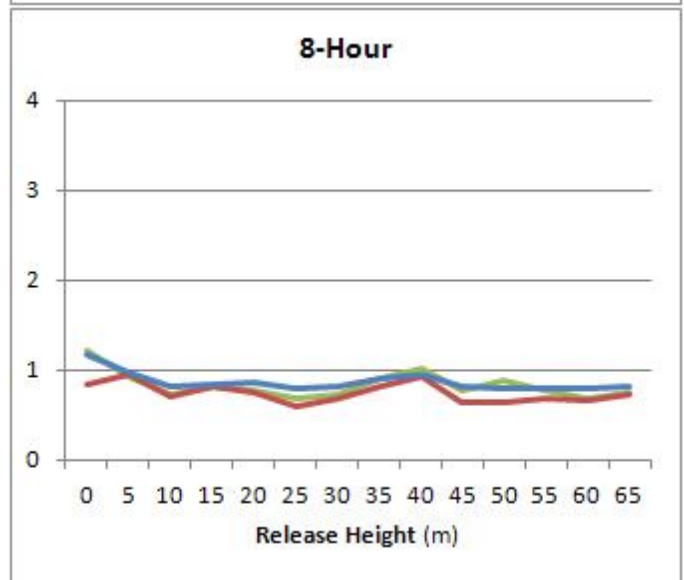
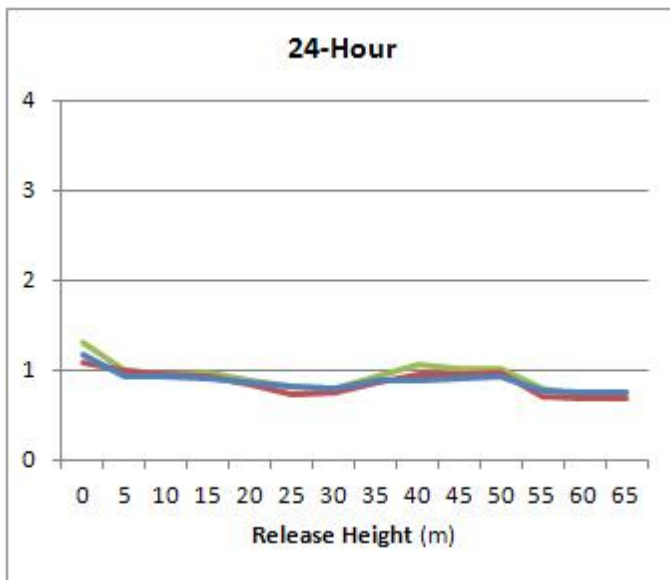
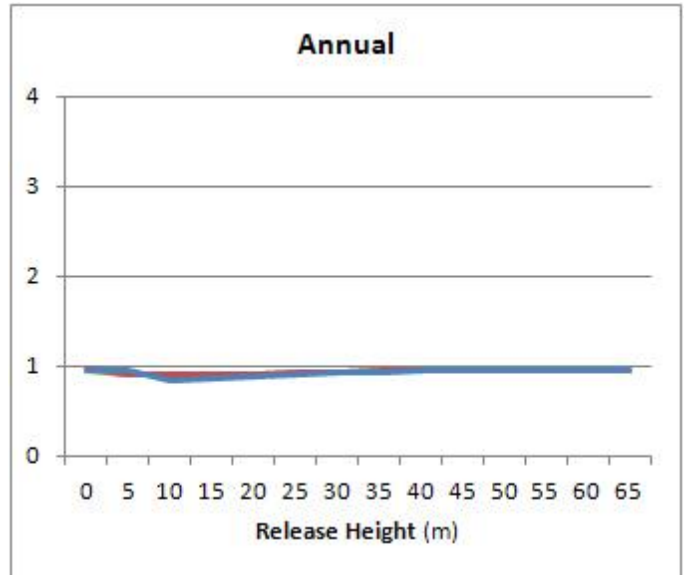
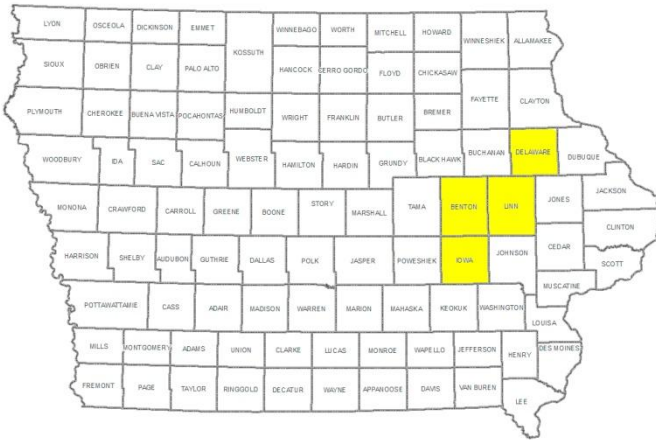
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 Old Representative Site: Cedar Rapids



Source Type
 — Point — Volume — Area

New Representative Site: Cedar Rapids

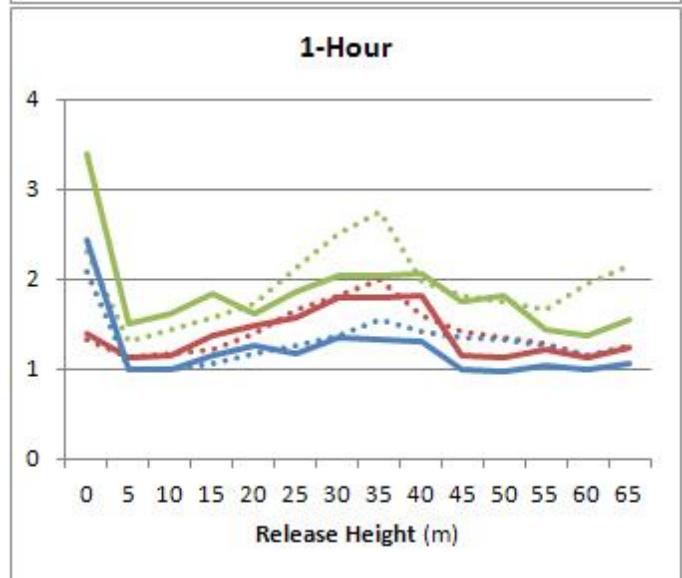
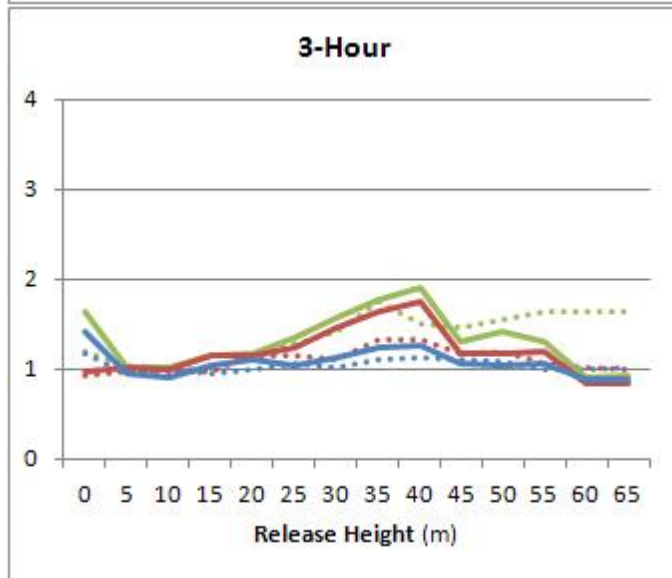
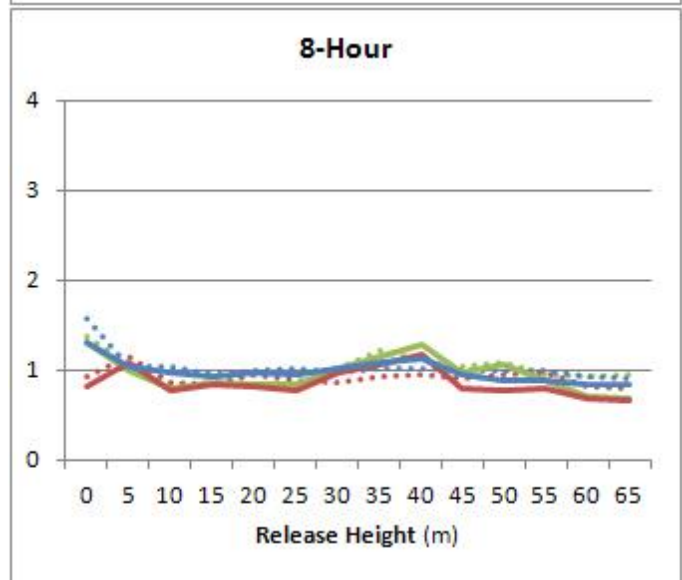
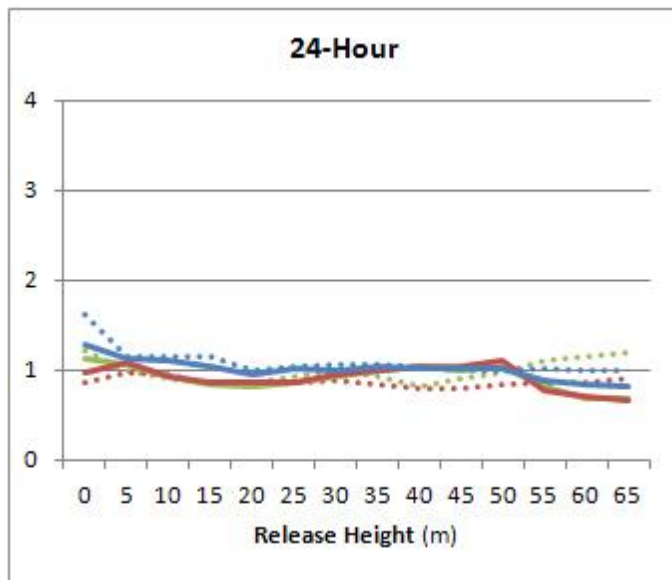
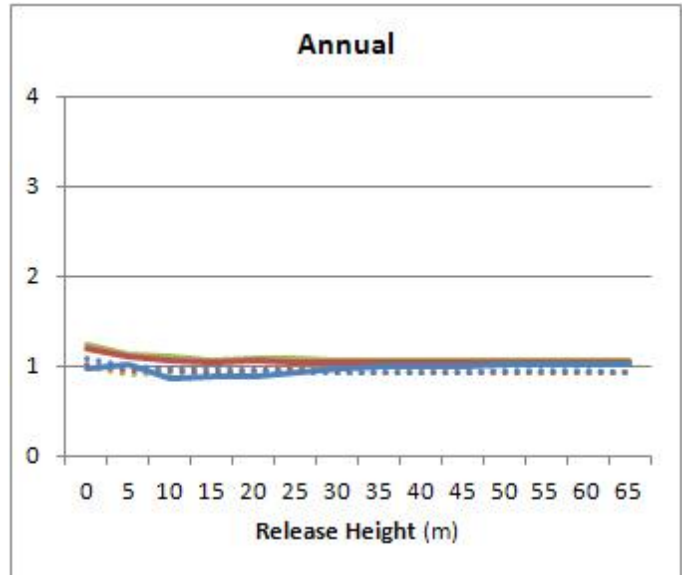
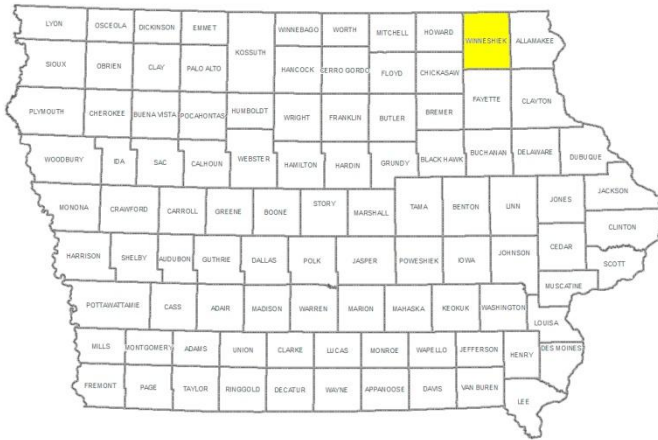
Old Representative Site: Cedar Rapids



Source Type

Point Volume Area

New Representative Site: Cedar Rapids
Old Representative Site: Waterloo

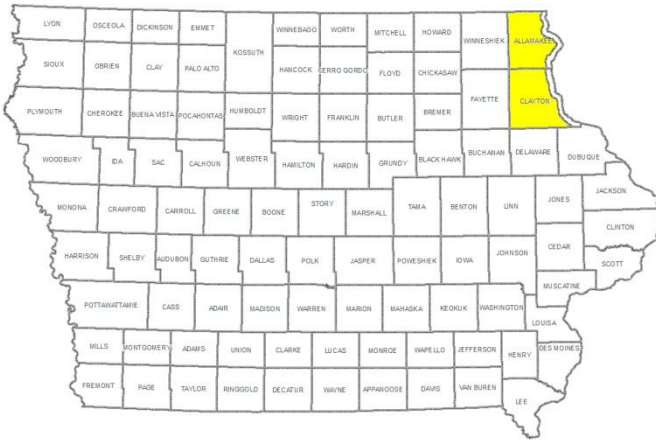


Source Type

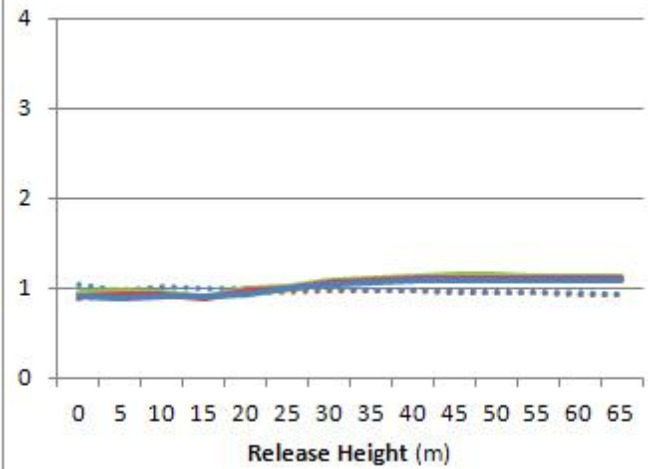
— Point — Volume — Area

New Representative Site: Cedar Rapids

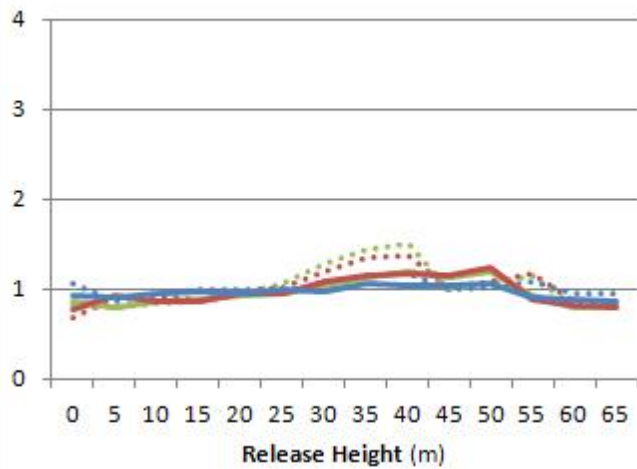
Old Representative Site: Dubuque



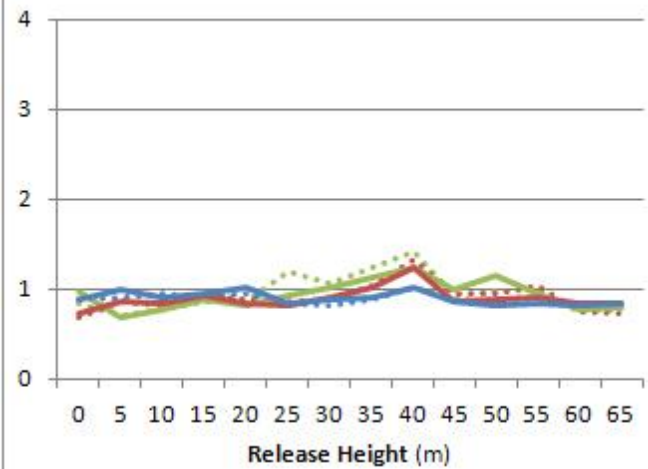
Annual



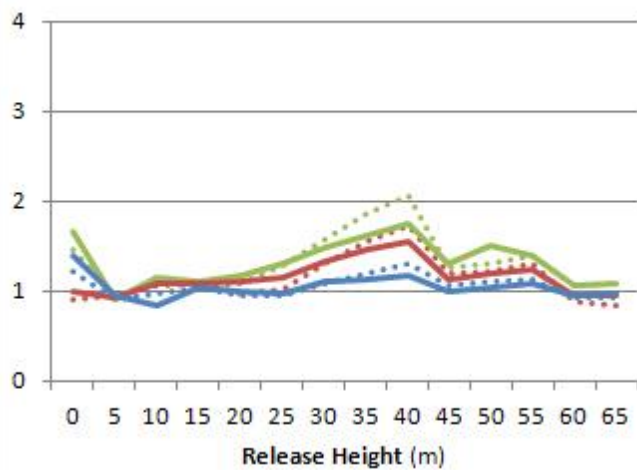
24-Hour



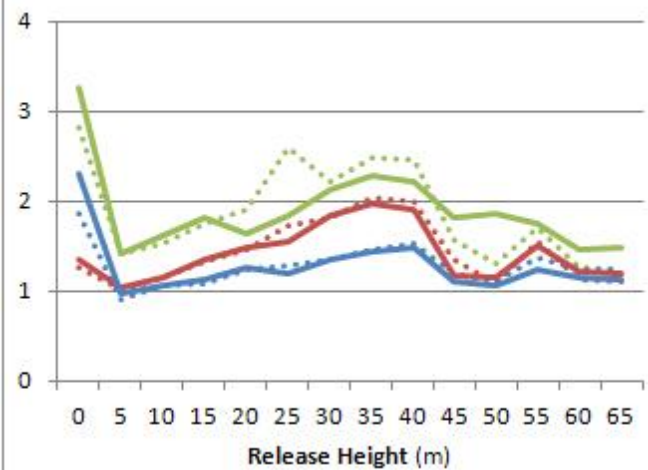
8-Hour



3-Hour



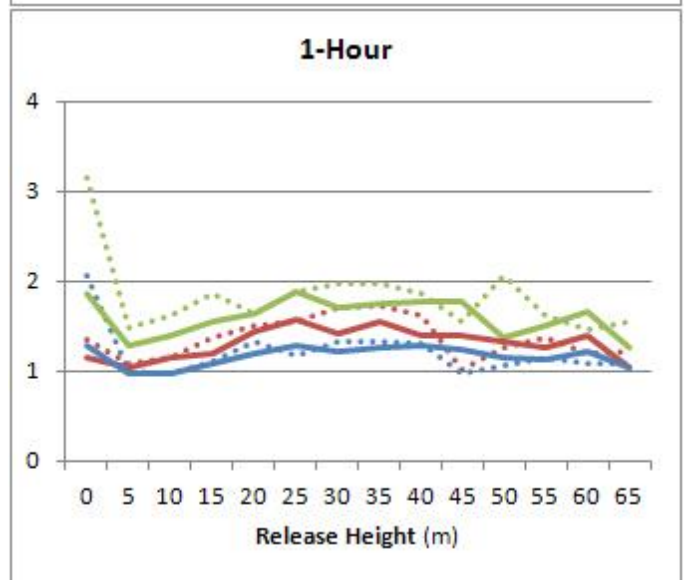
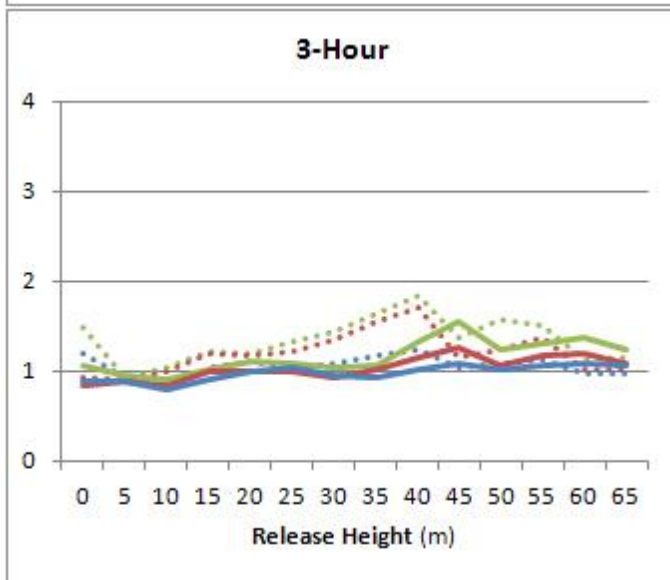
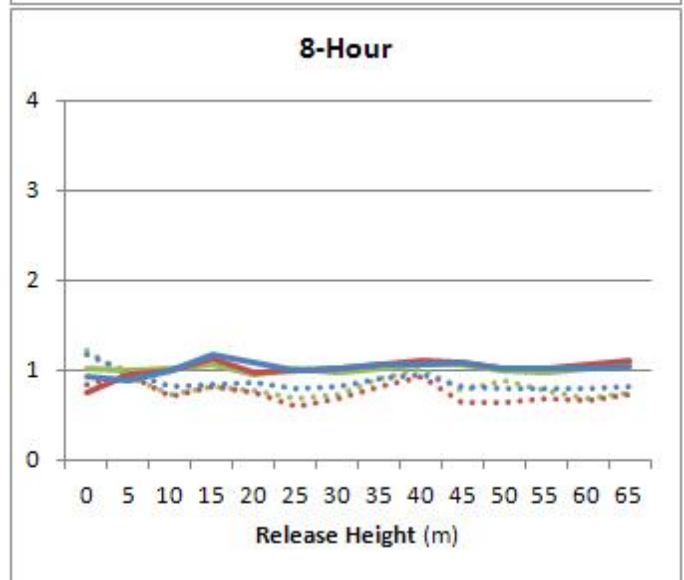
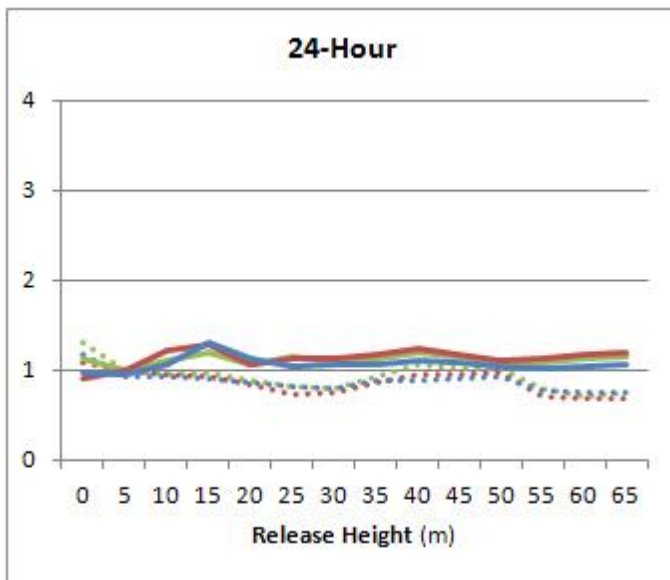
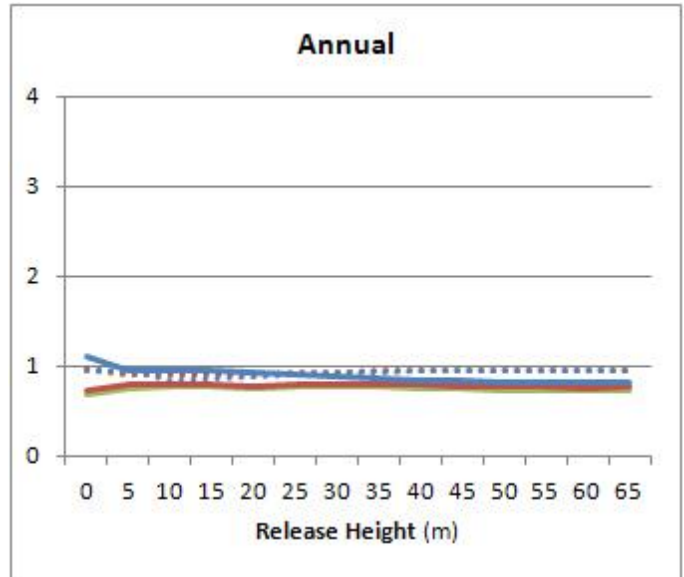
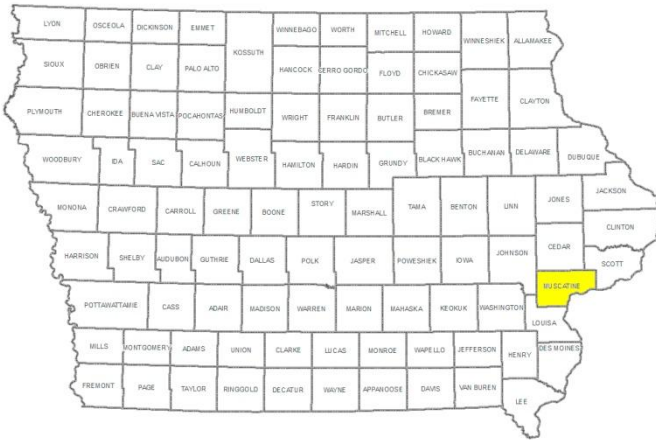
1-Hour



Source Type

— Point — Volume — Area

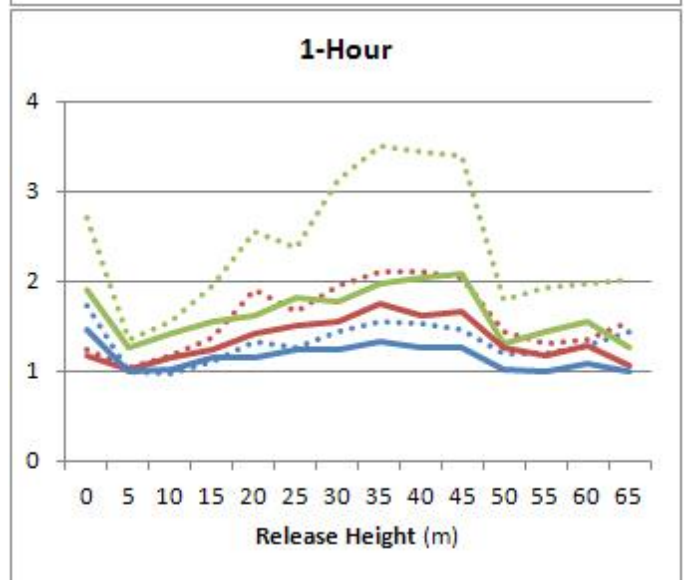
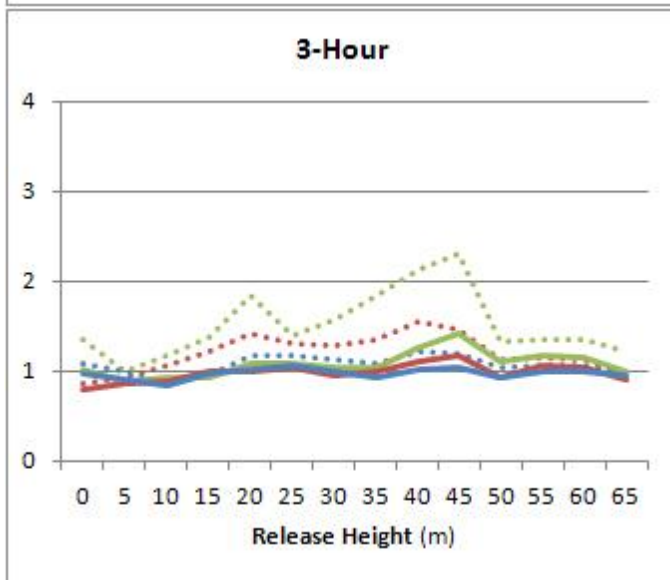
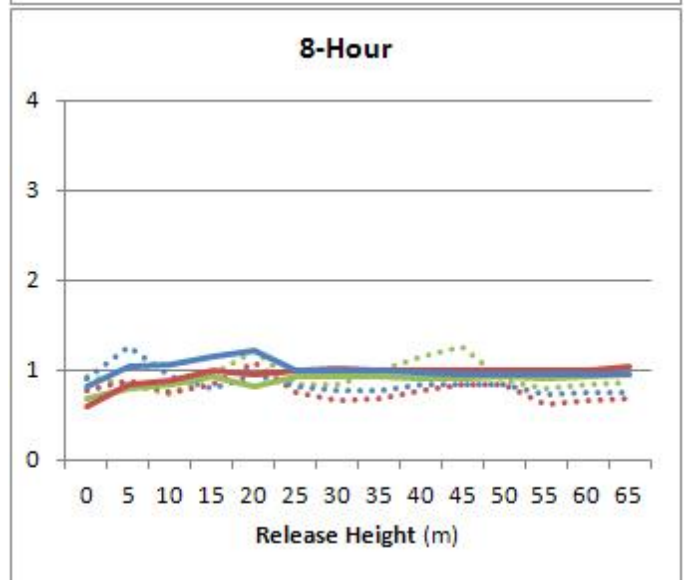
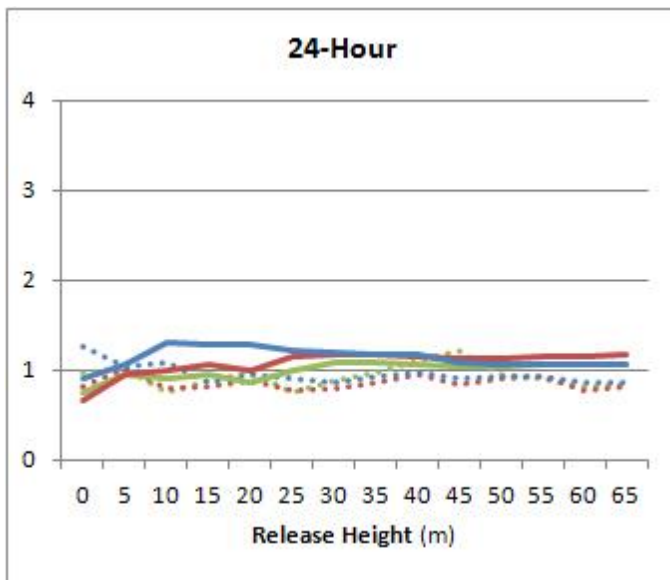
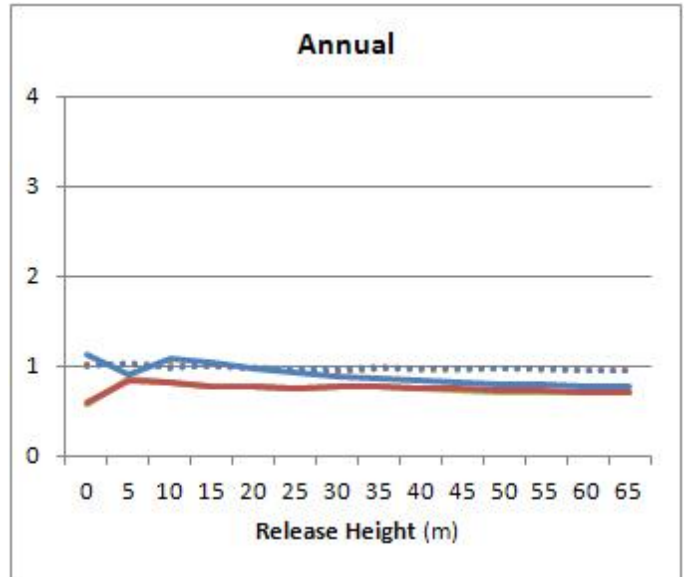
New Representative Site: Davenport
Old Representative Site: Cedar Rapids



Source Type

Point Volume Area

New Representative Site: Davenport
 Old Representative Site: Moline

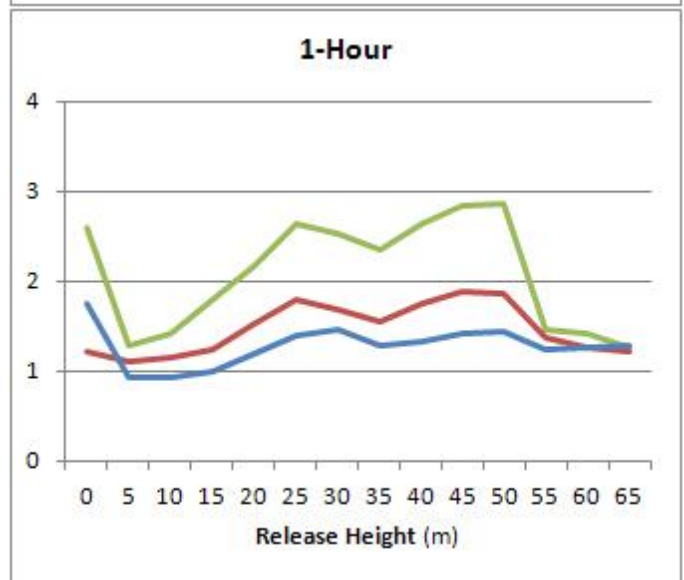
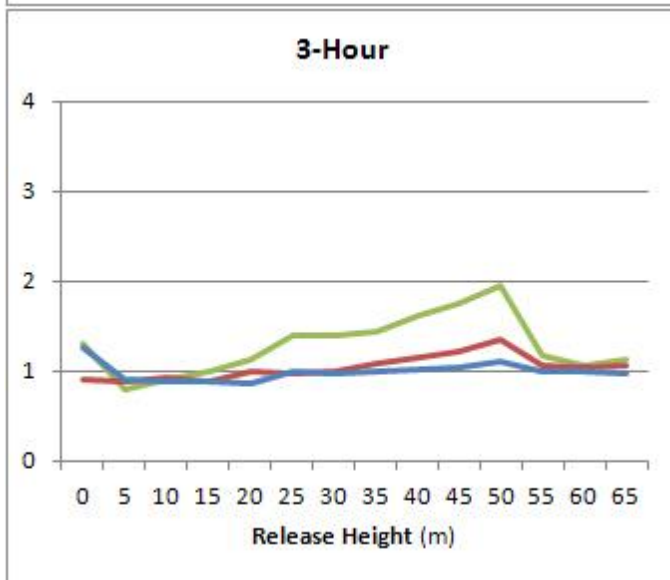
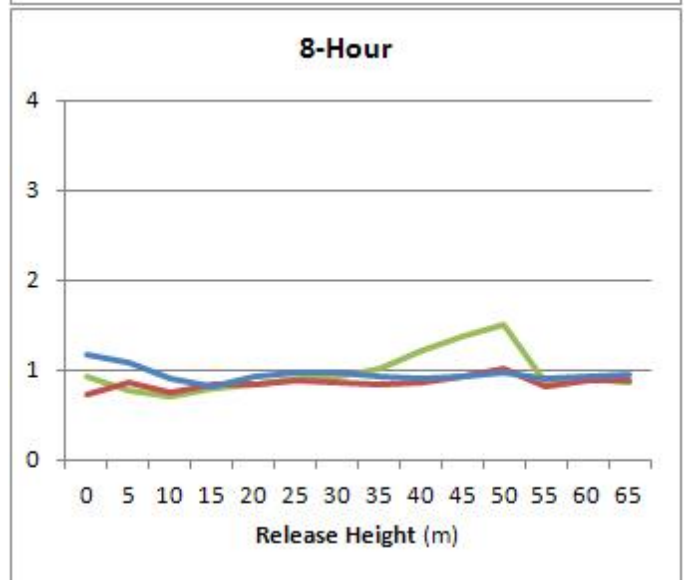
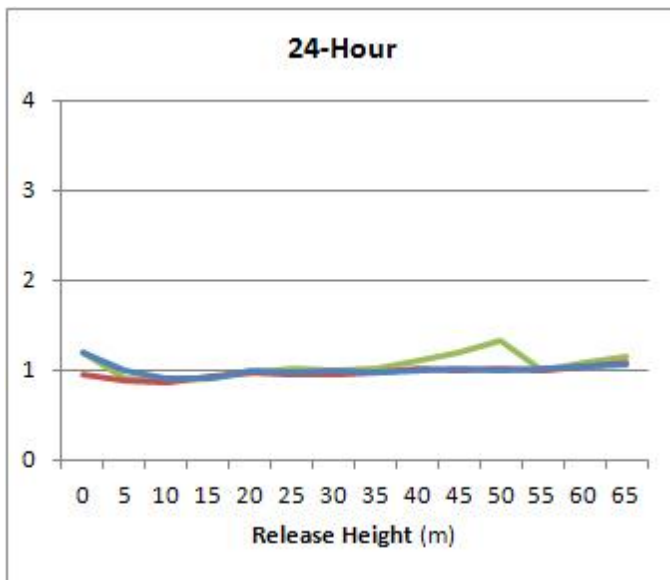
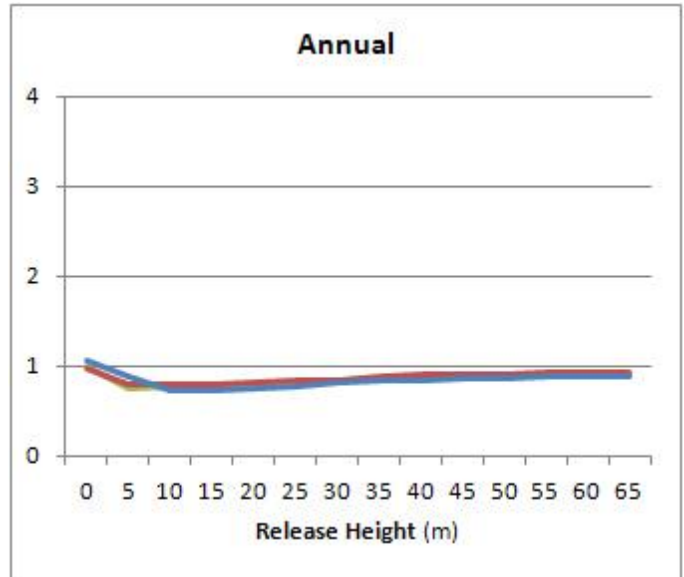
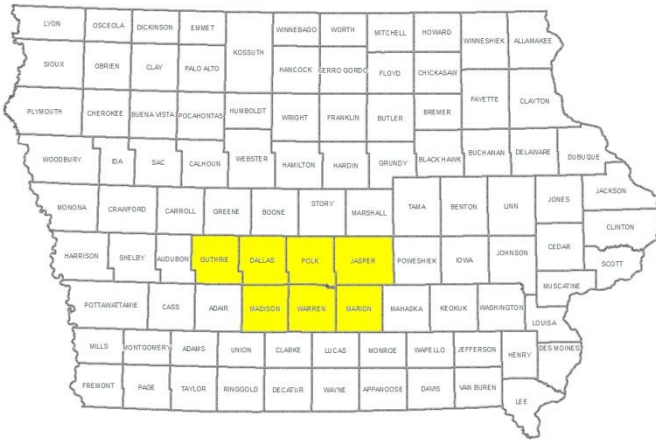


Source Type

Point Volume Area

New Representative Site: Des Moines

Old Representative Site: Des Moines



Source Type

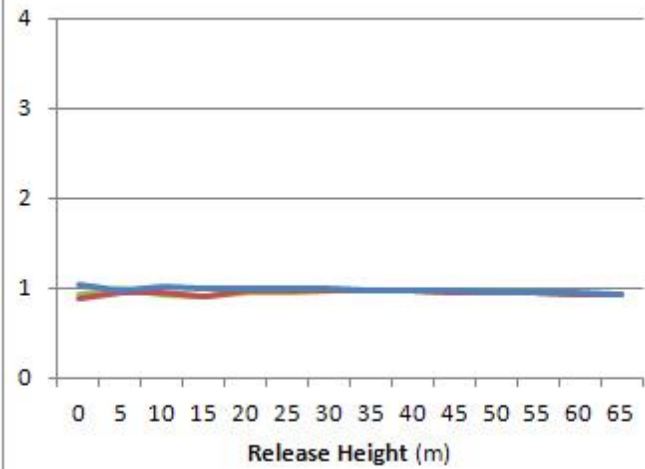
Point Volume Area

New Representative Site: Dubuque

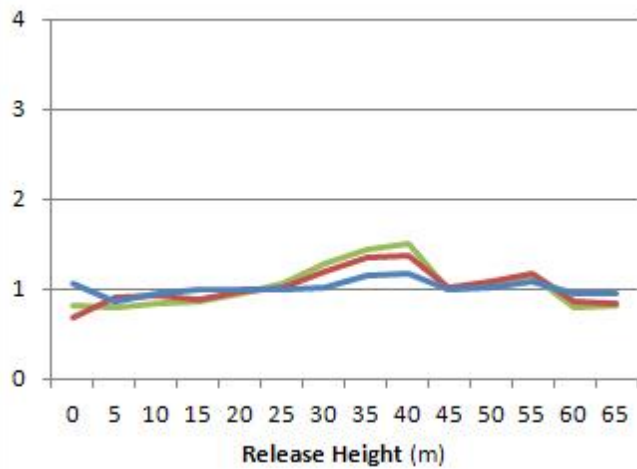
Old Representative Site: Dubuque



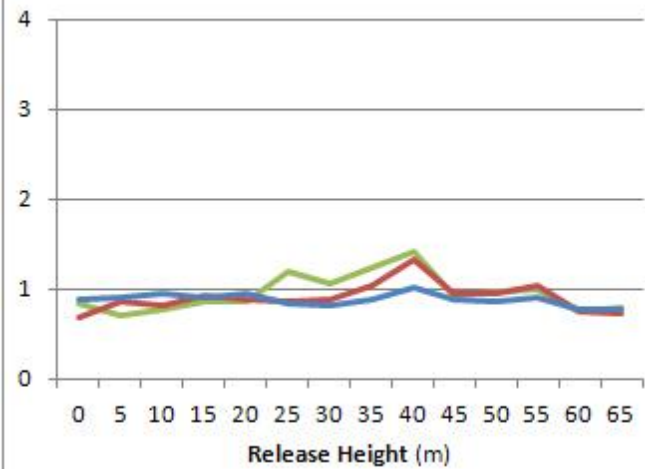
Annual



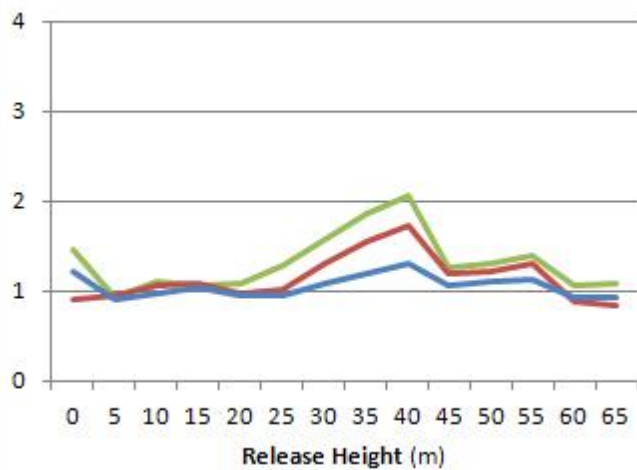
24-Hour



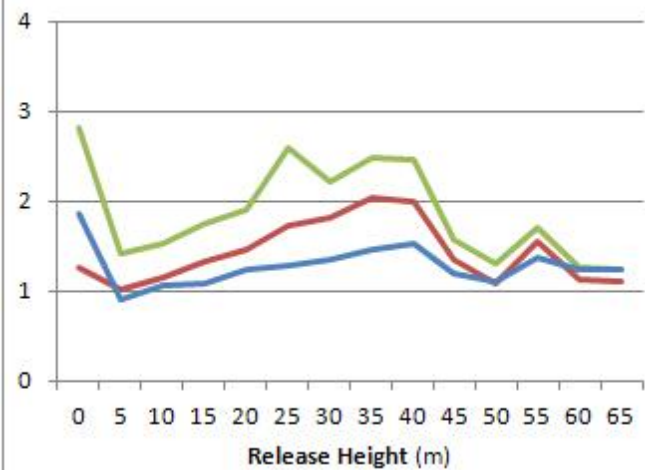
8-Hour



3-Hour



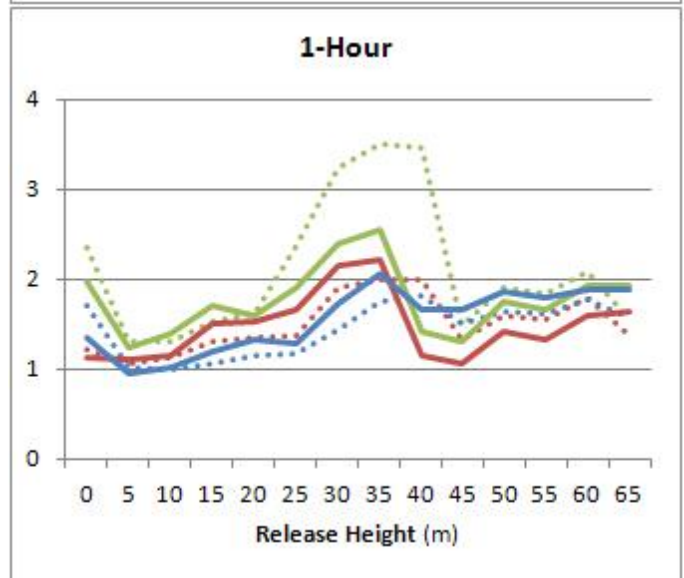
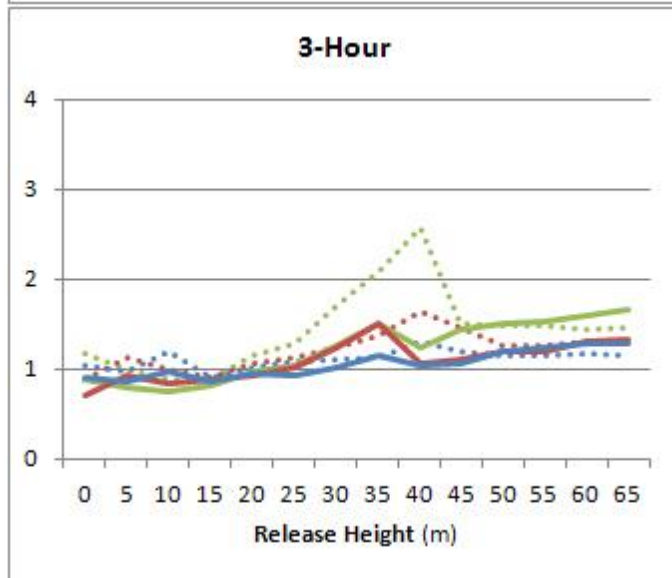
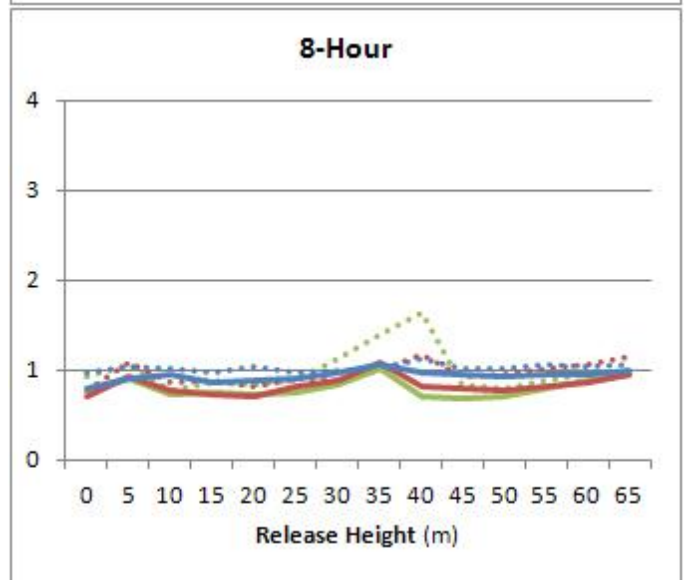
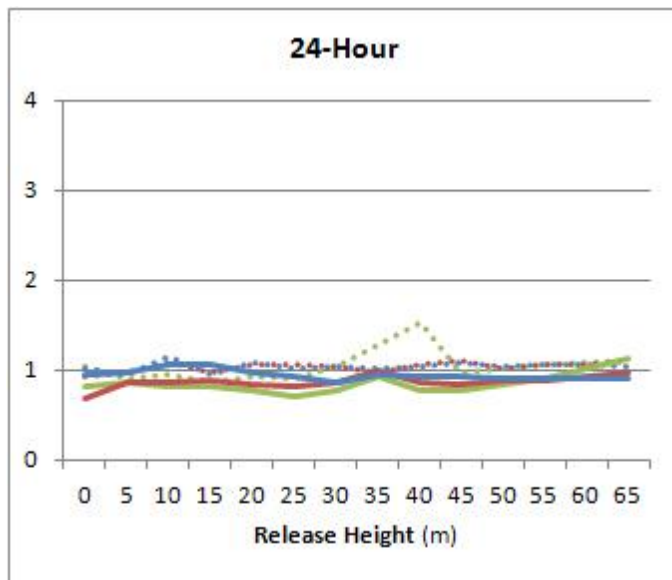
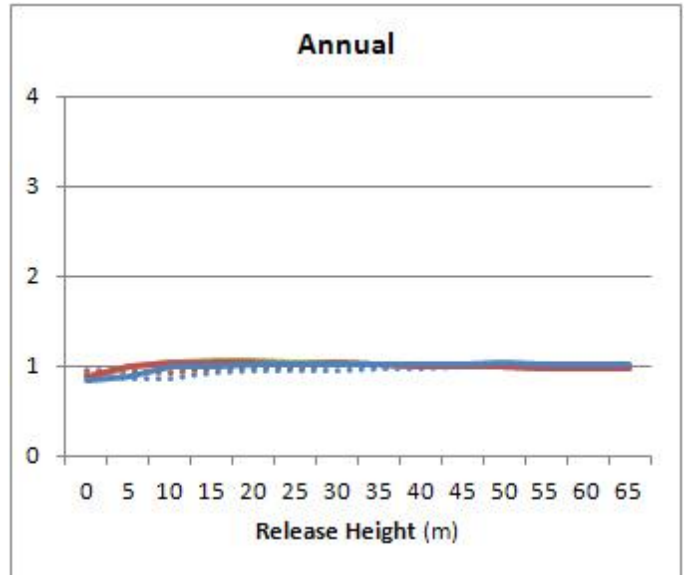
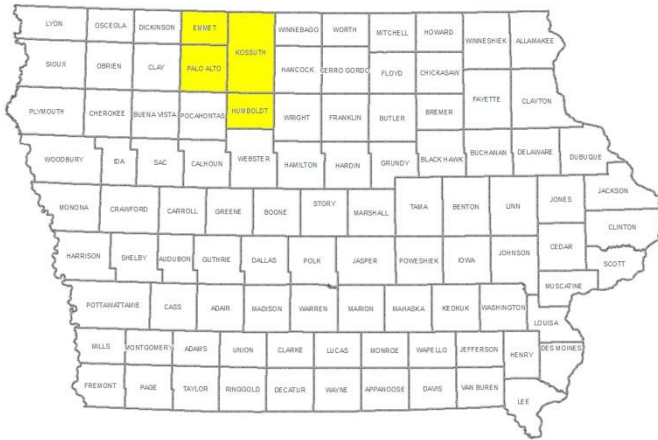
1-Hour



Source Type

— Point — Volume — Area

New Representative Site: Estherville
 Old Representative Site: Mason City

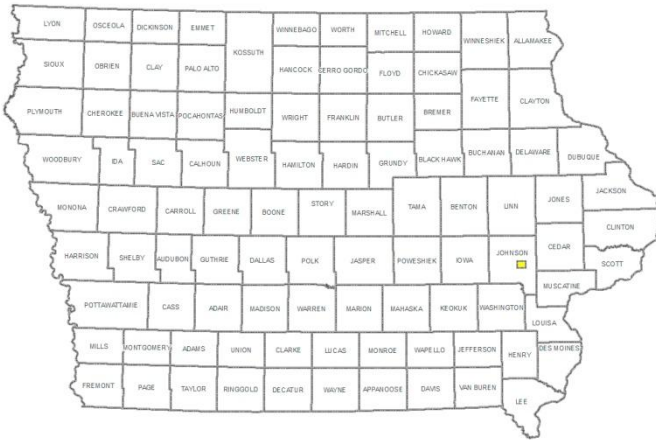


Source Type

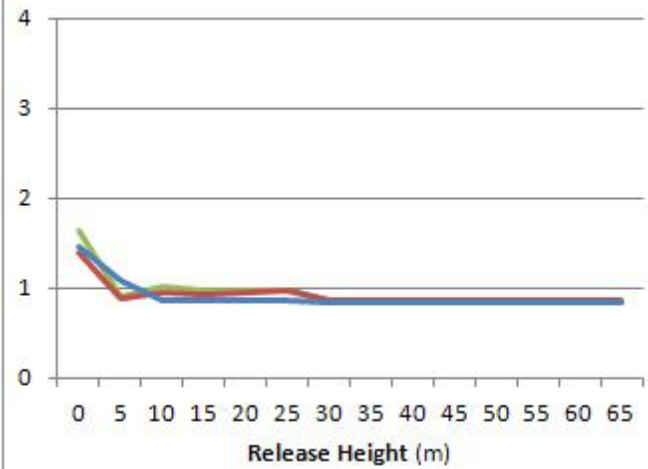
— Point
 — Volume
 — Area

New Representative Site: Iowa City

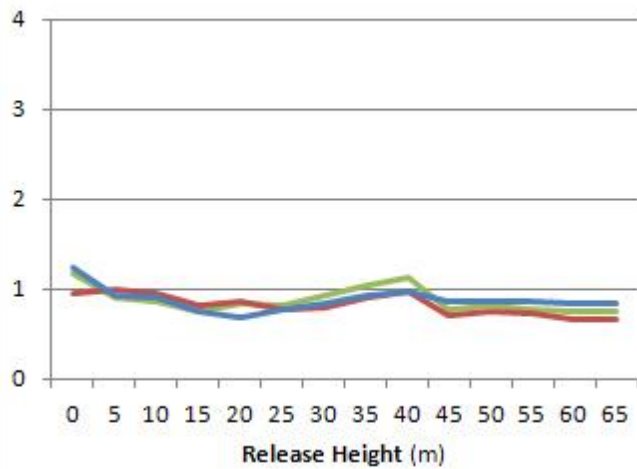
Old Representative Site: Iowa City



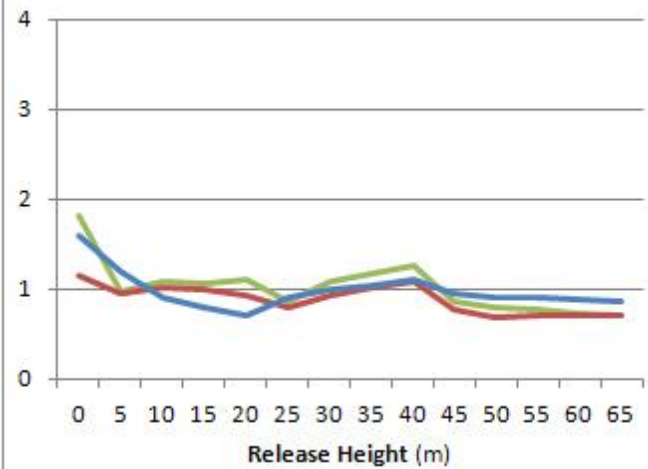
Annual



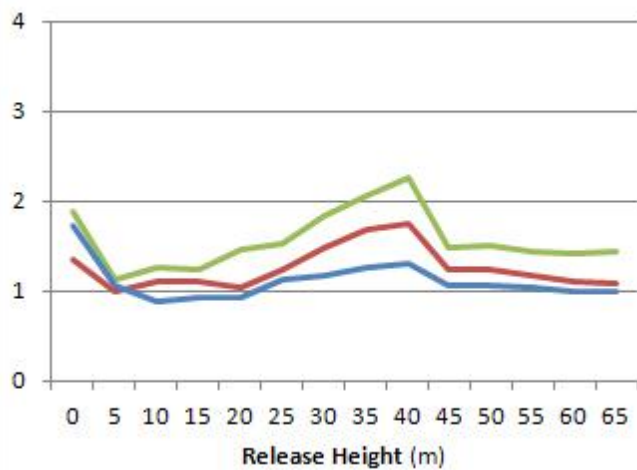
24-Hour



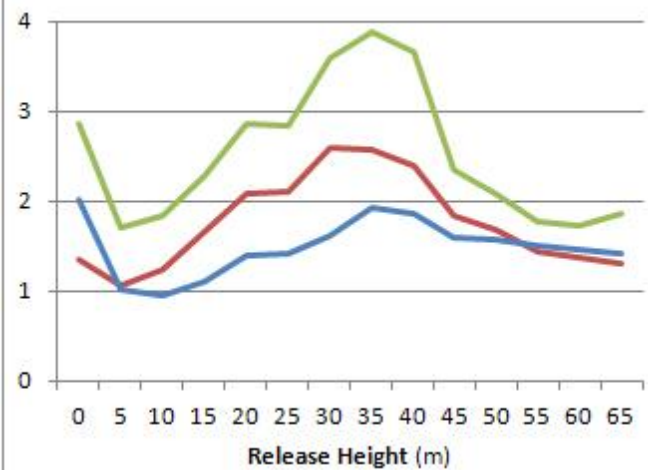
8-Hour



3-Hour



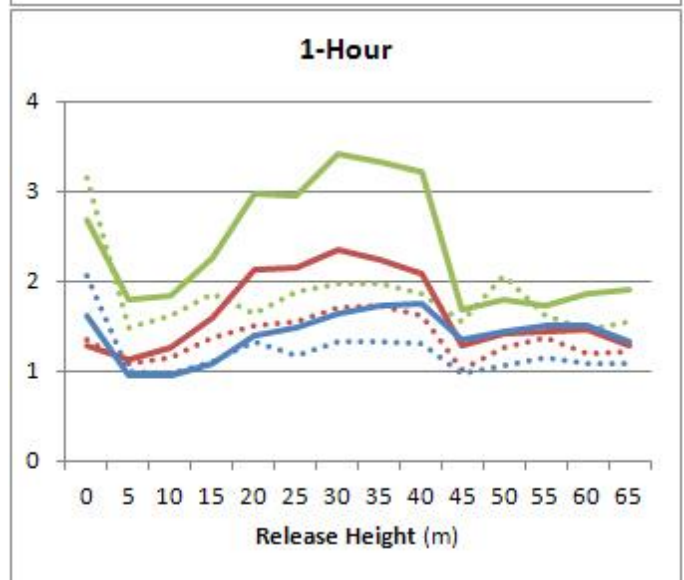
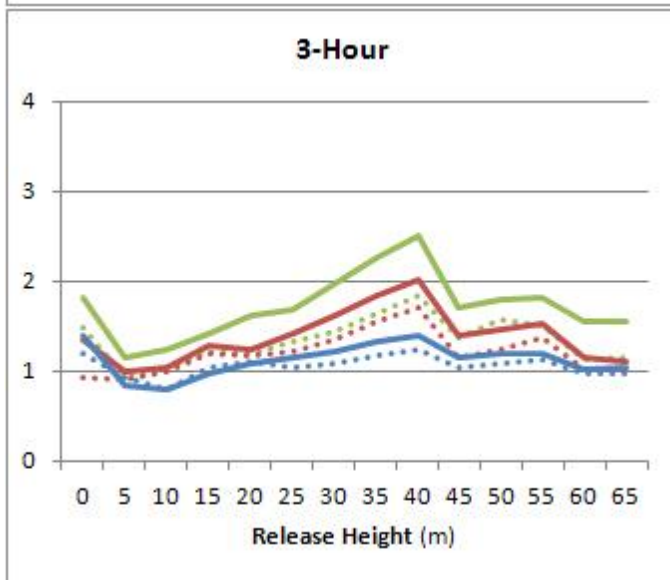
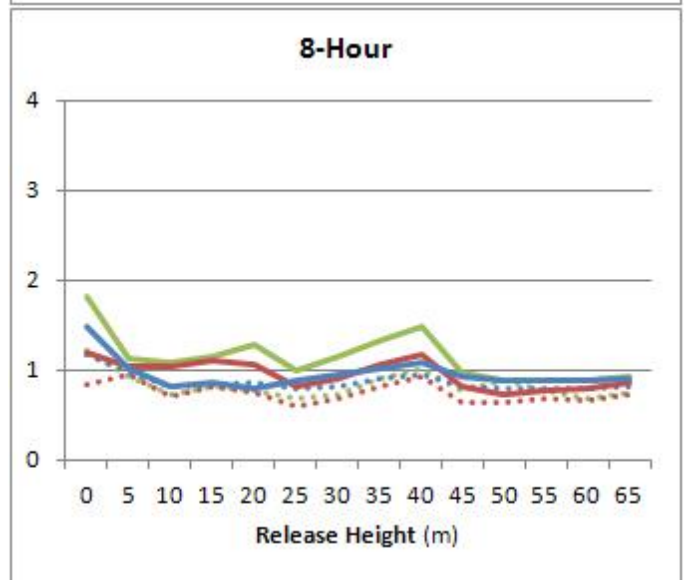
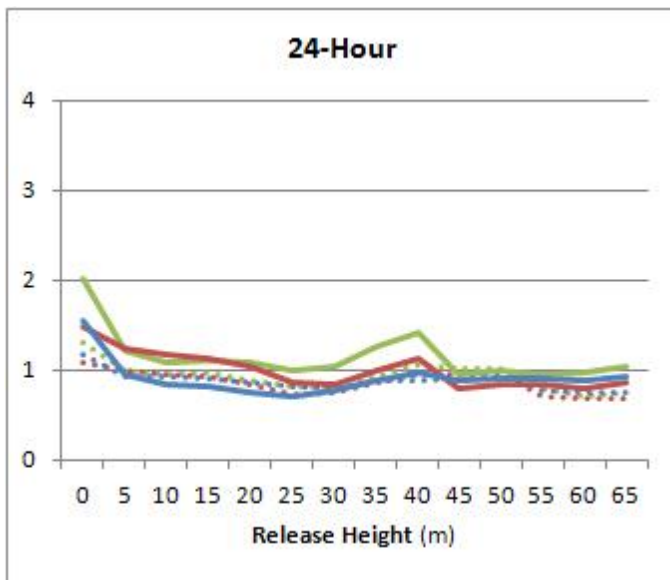
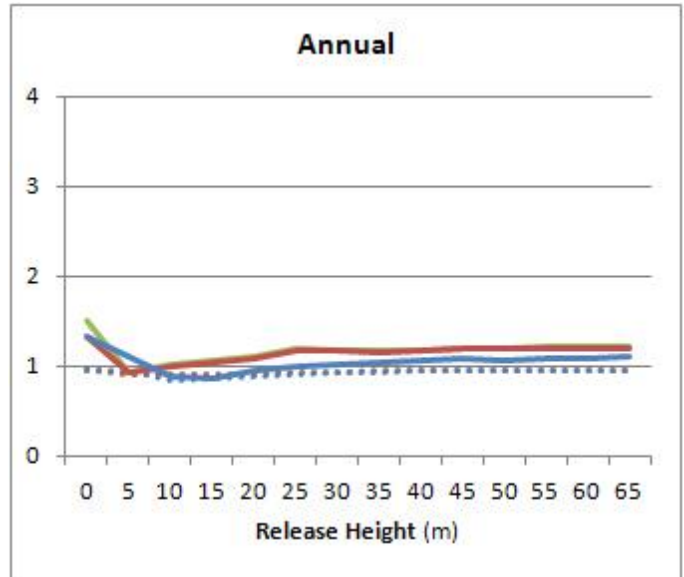
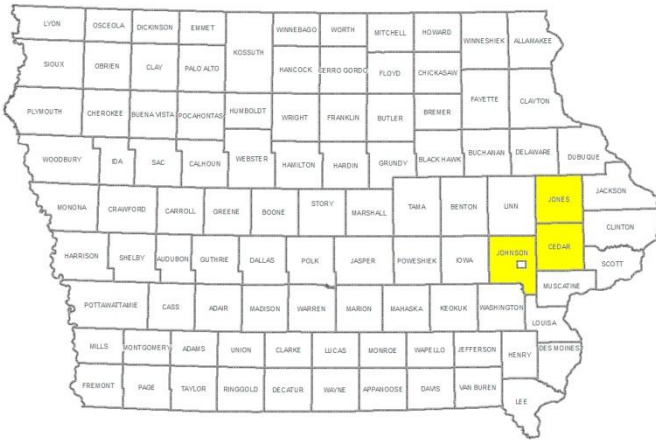
1-Hour



Source Type

— Point — Volume — Area

New Representative Site: Iowa City
Old Representative Site: Cedar Rapids



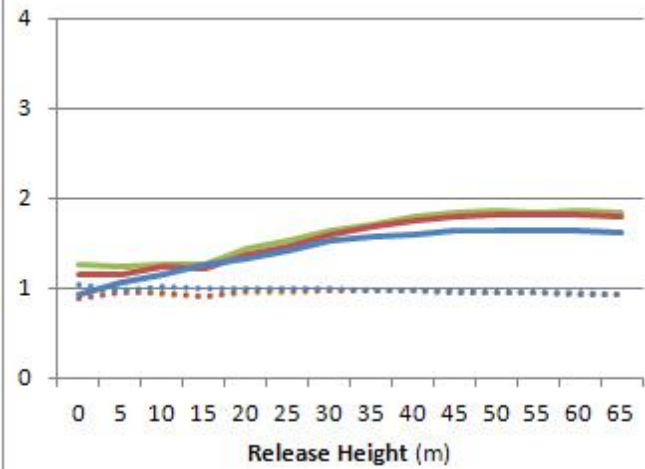
Source Type

— Point — Volume — Area

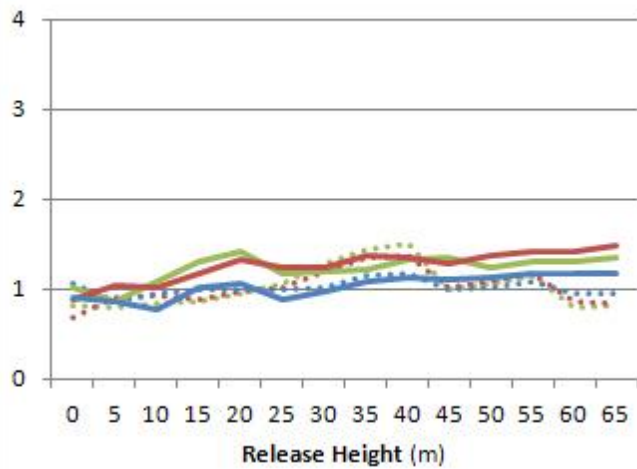
New Representative Site: La Crosse
Old Representative Site: Dubuque



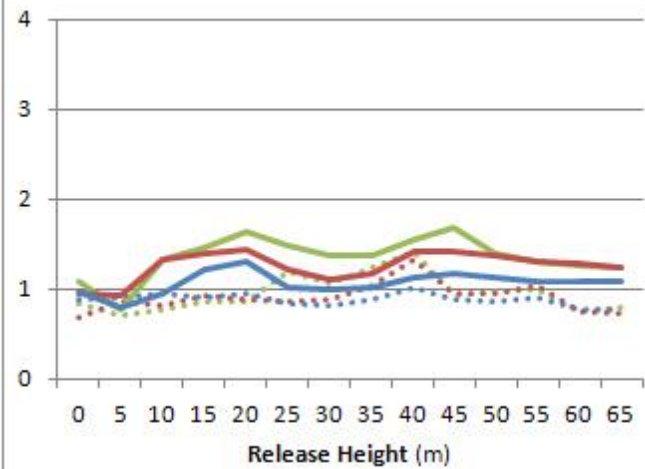
Annual



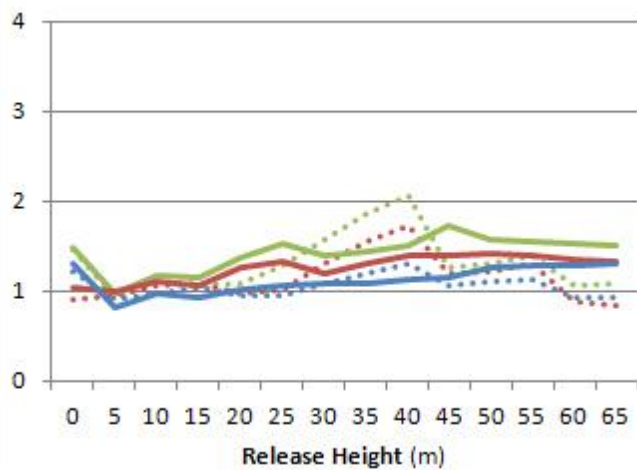
24-Hour



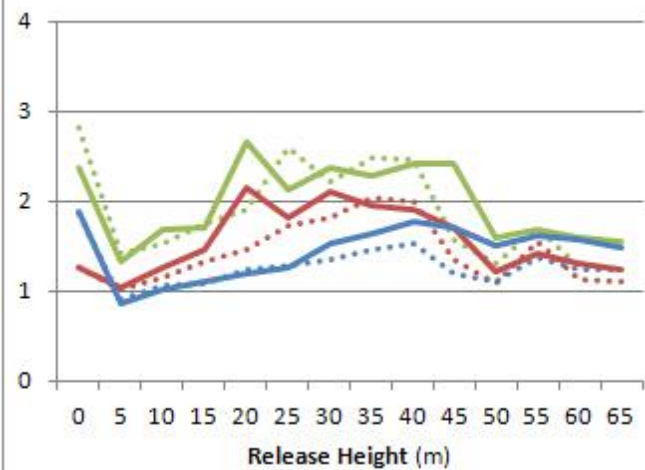
8-Hour



3-Hour



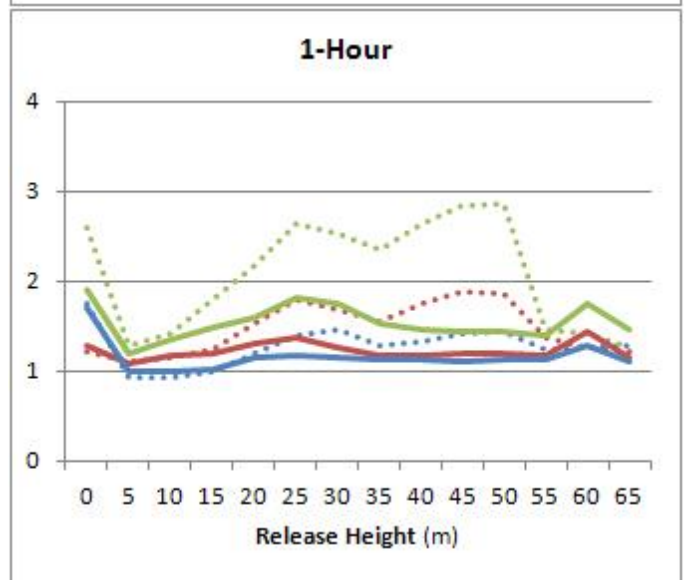
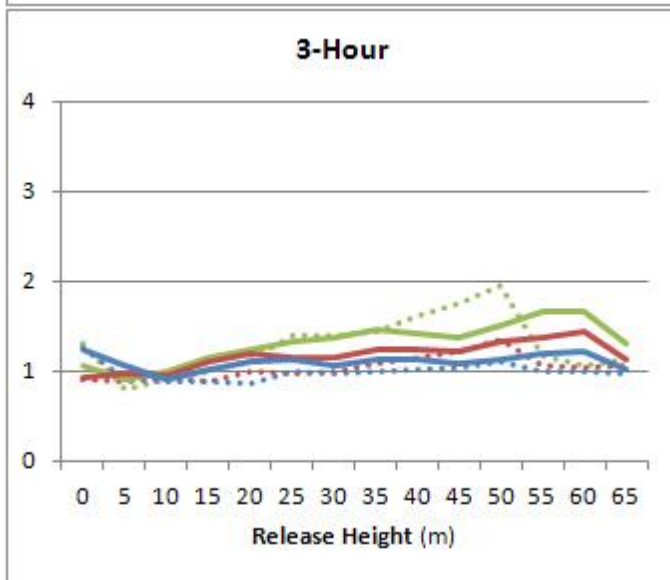
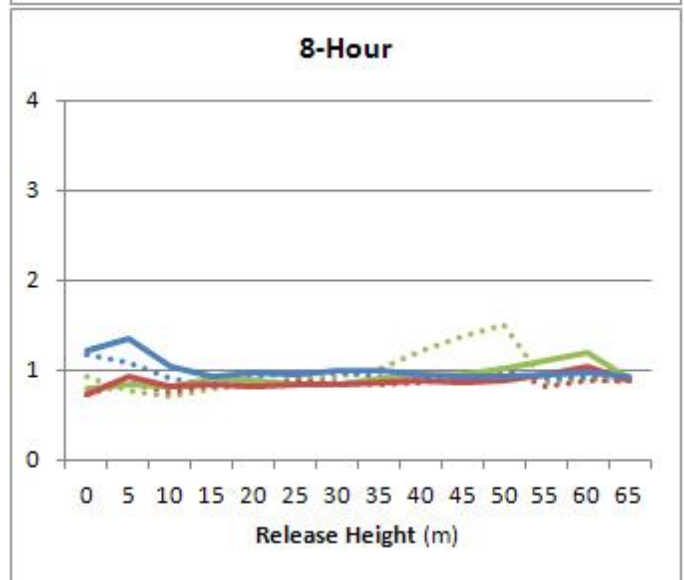
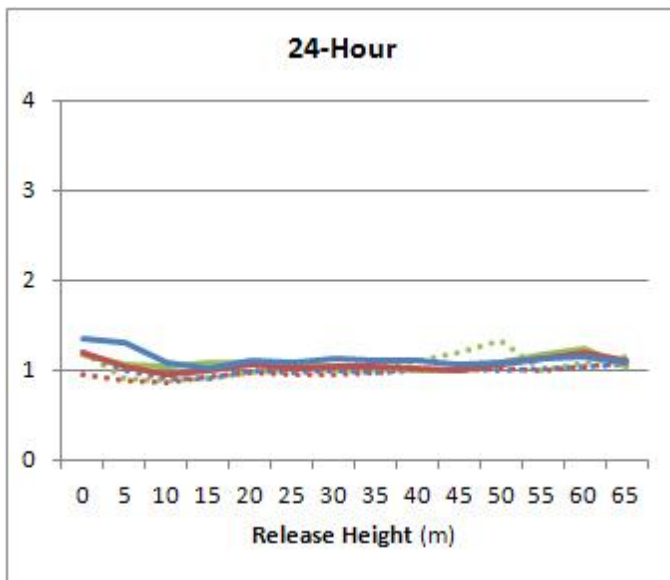
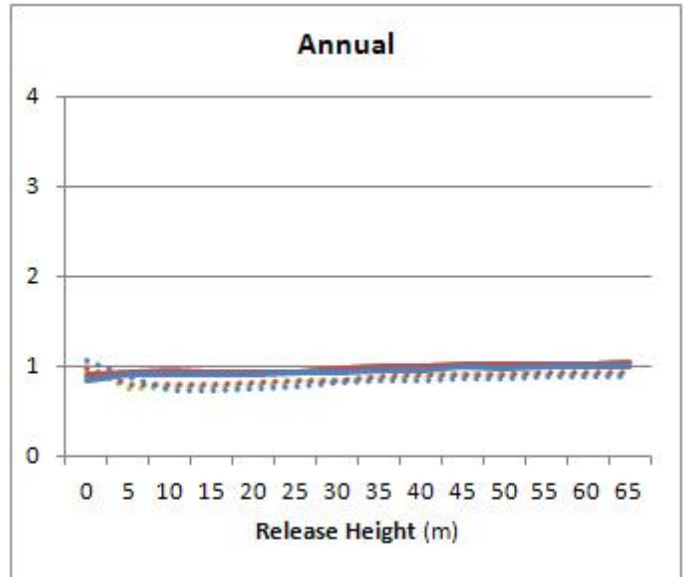
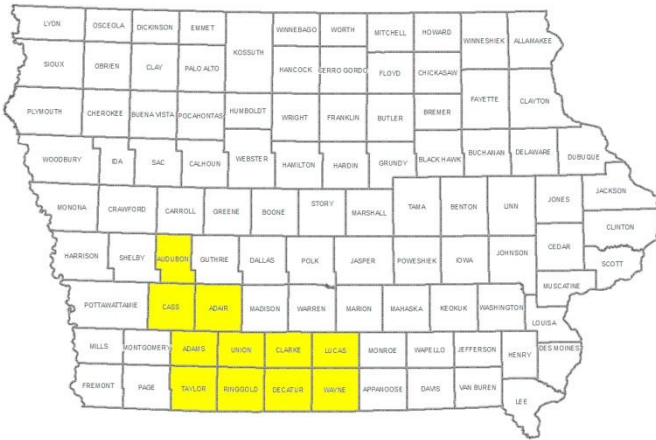
1-Hour



Source Type

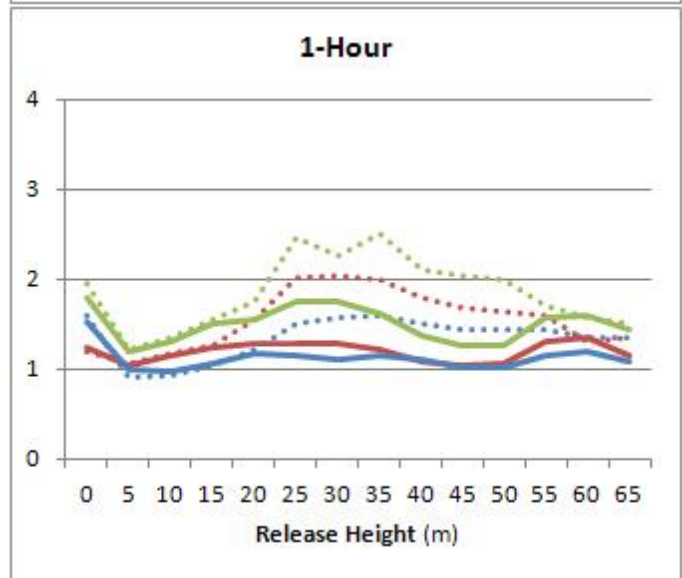
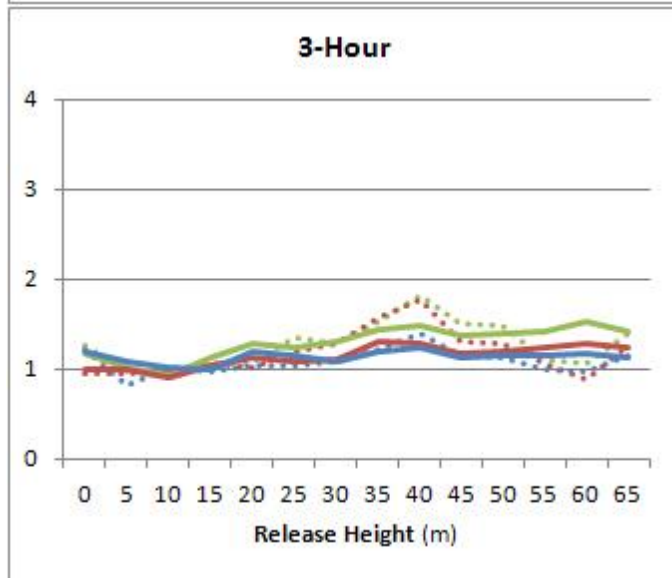
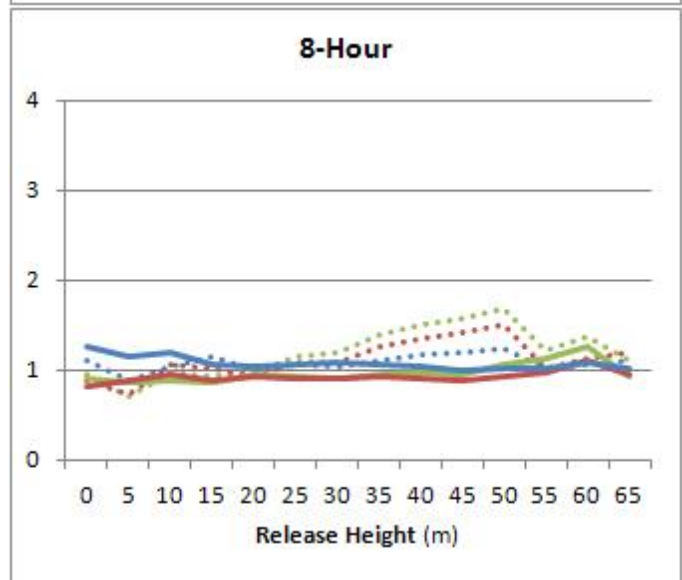
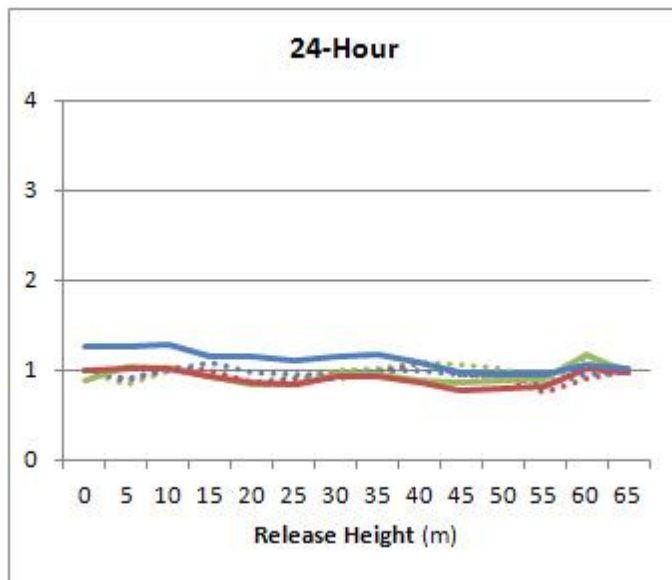
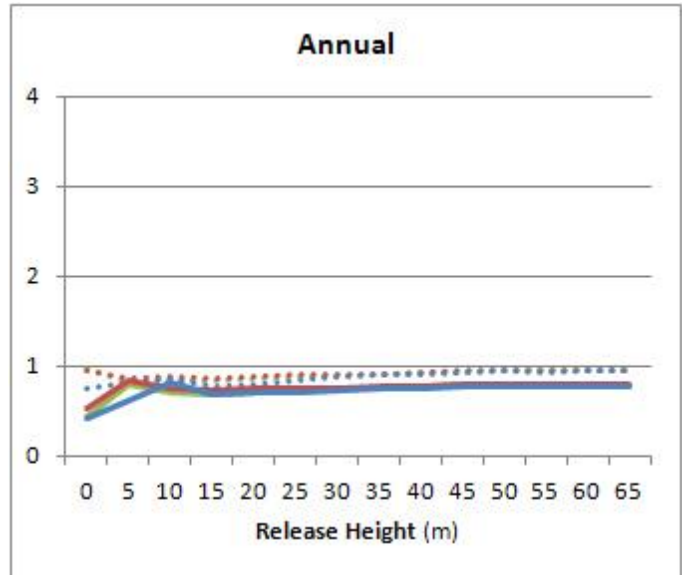
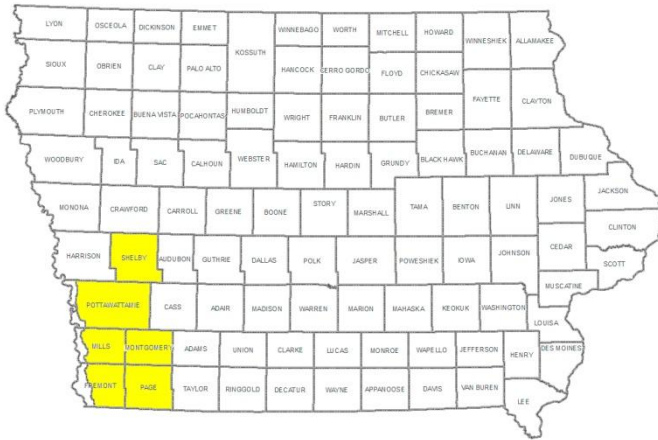
— Point — Volume — Area

New Representative Site: Lamoni
Old Representative Site: Des Moines



Source Type
 Point Volume Area

New Representative Site: Lamoni
Old Representative Site: Omaha

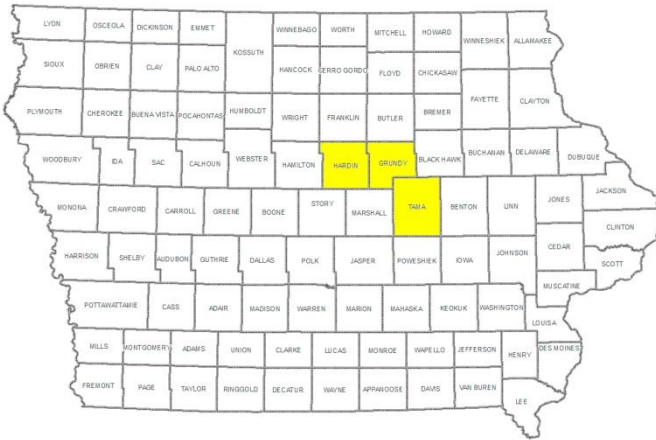


Source Type

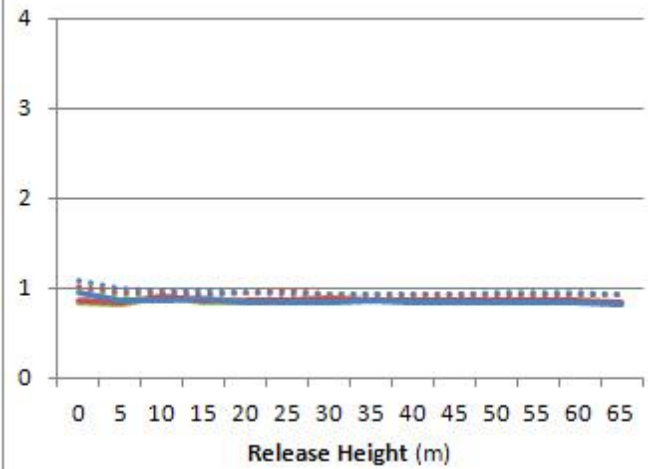
Point Volume Area

New Representative Site: Marshalltown

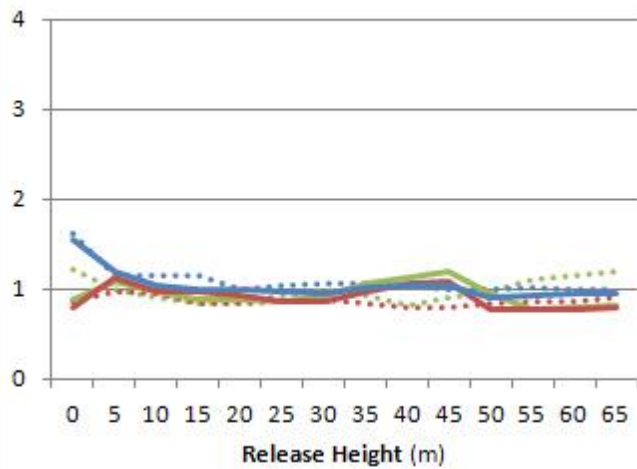
Old Representative Site: Waterloo



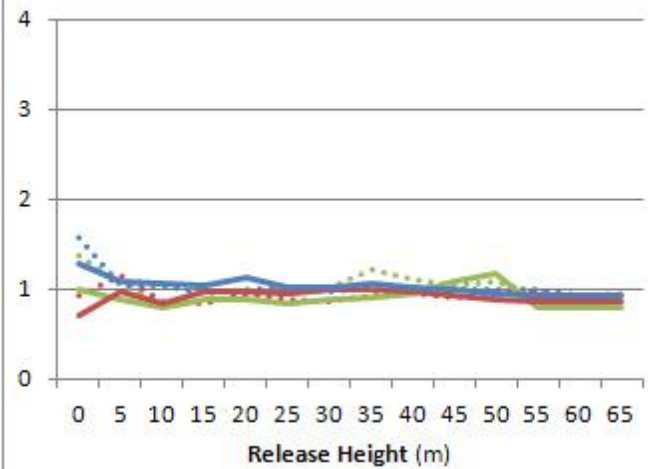
Annual



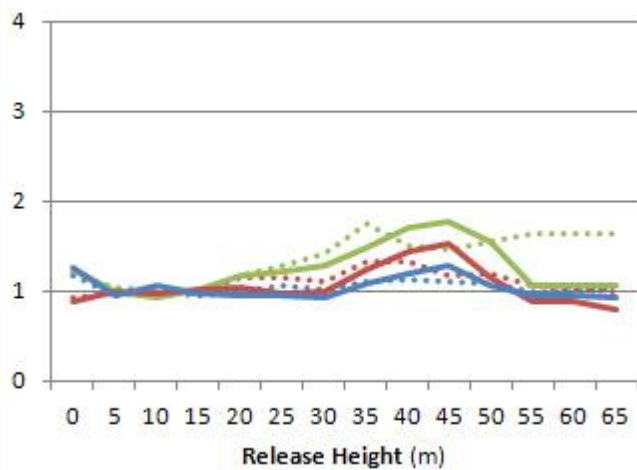
24-Hour



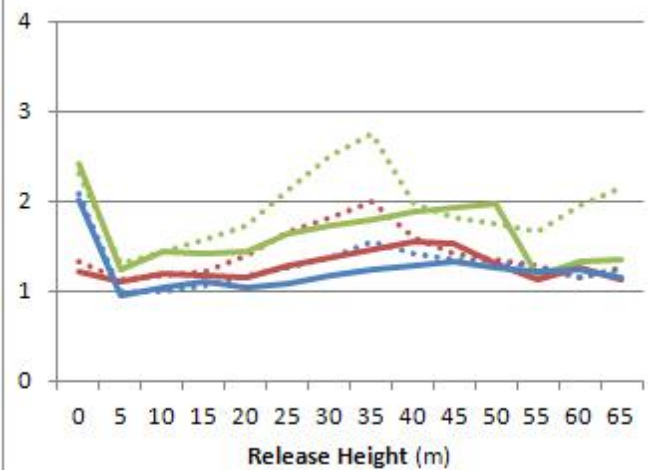
8-Hour



3-Hour



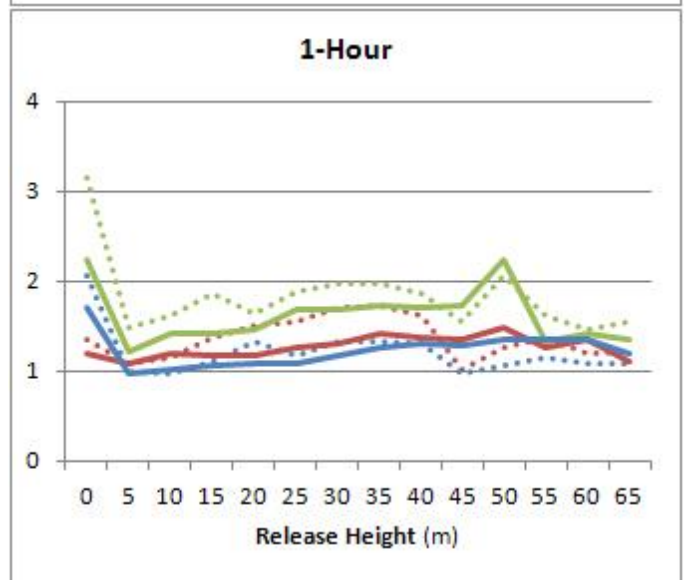
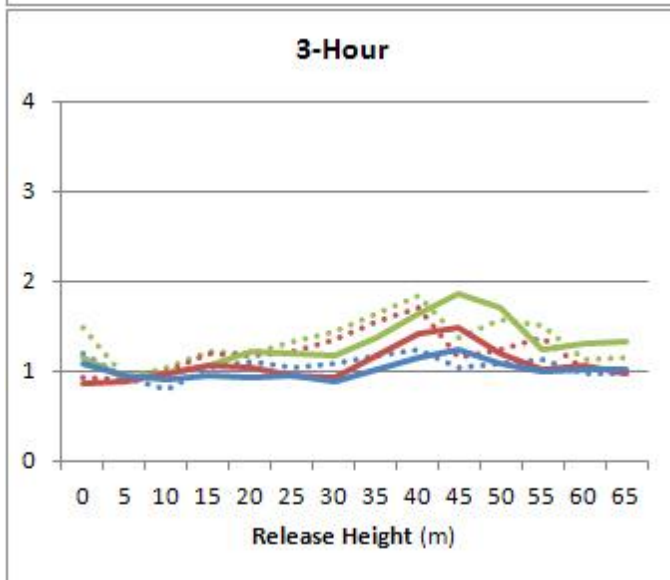
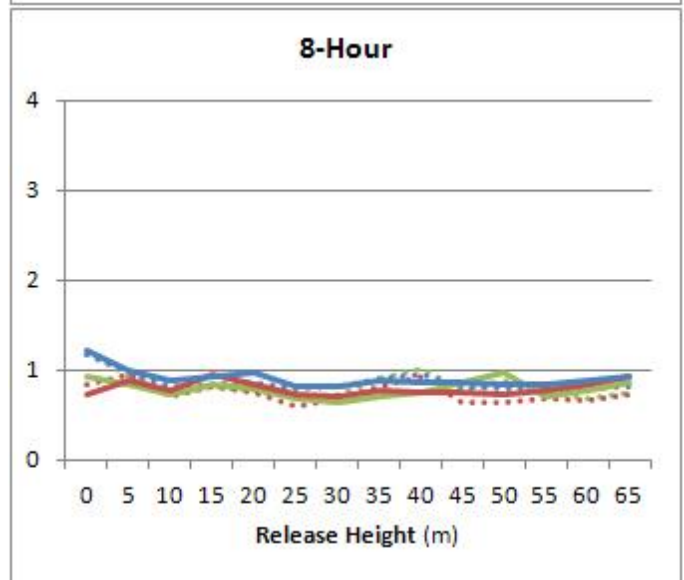
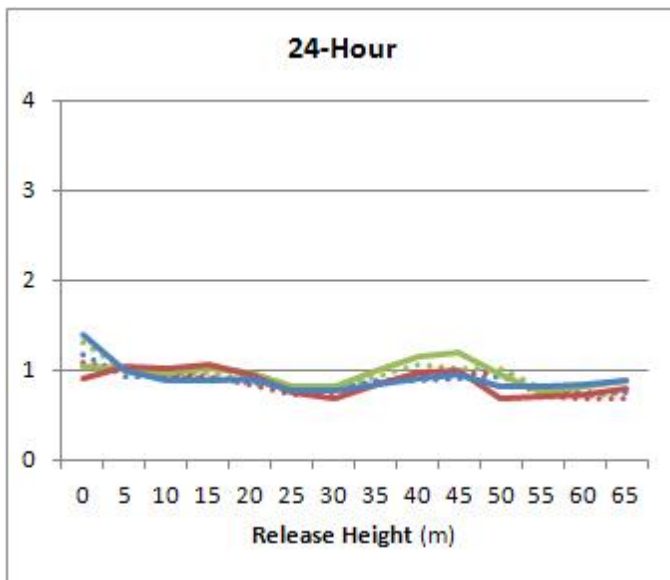
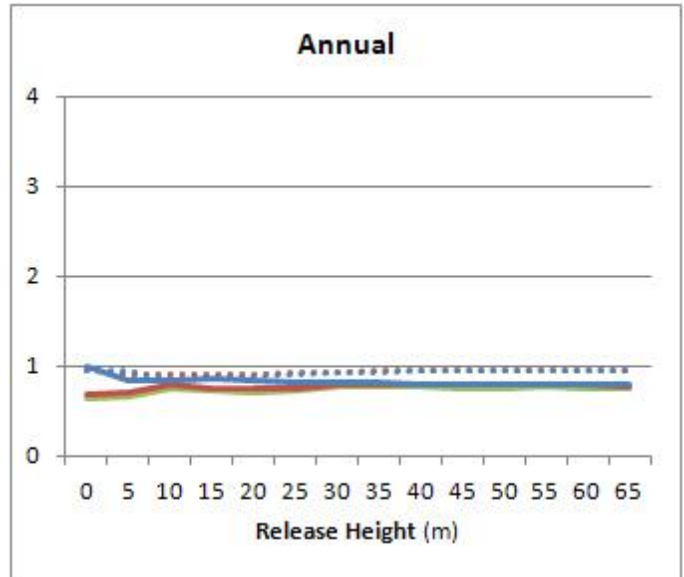
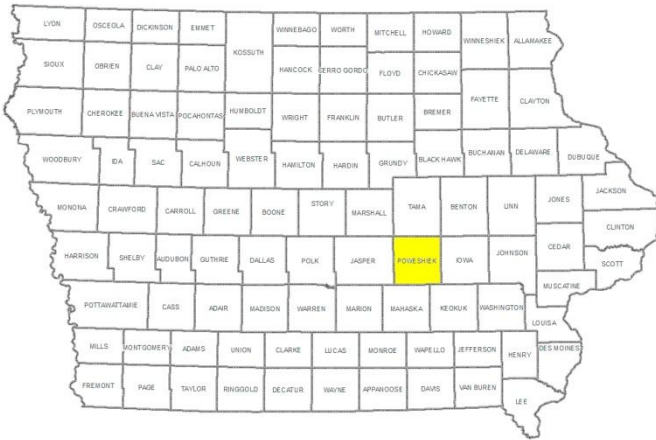
1-Hour



Source Type

Point Volume Area

New Representative Site: Marshalltown
Old Representative Site: Cedar Rapids

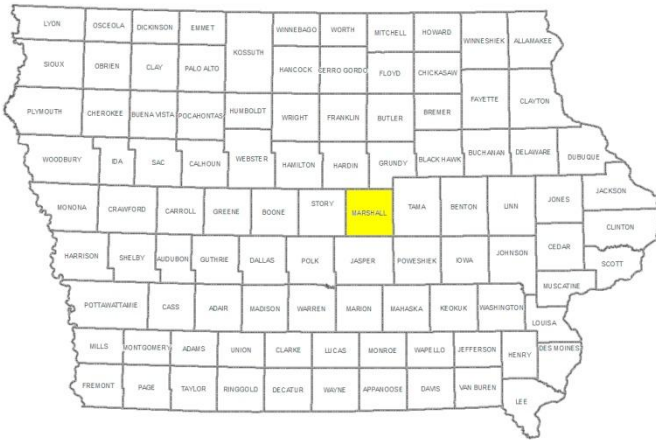


Source Type

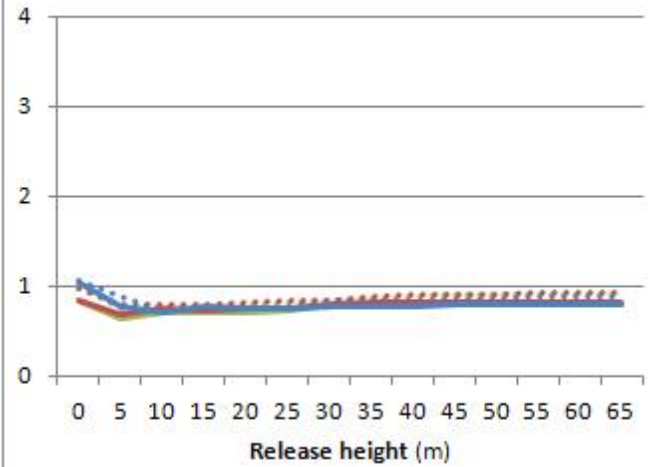
— Point — Volume — Area

New Representative Site: Marshalltown

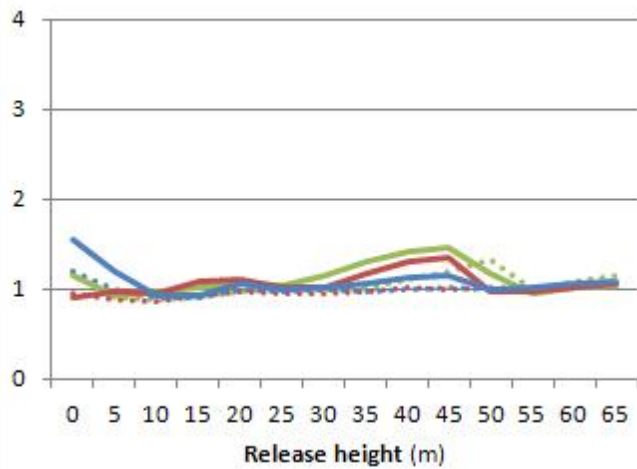
Old Representative Site: Des Moines



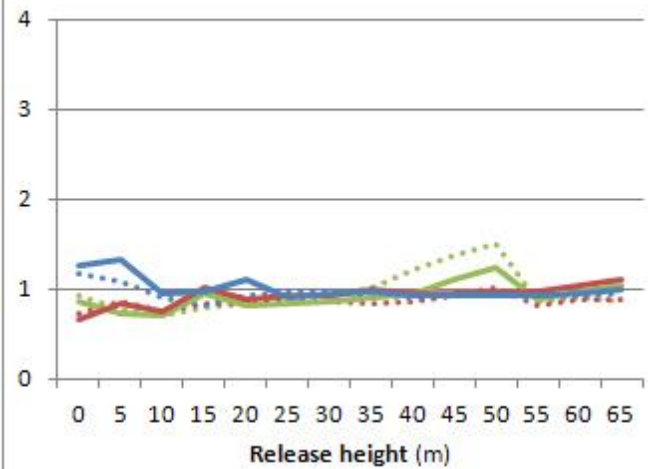
Annual



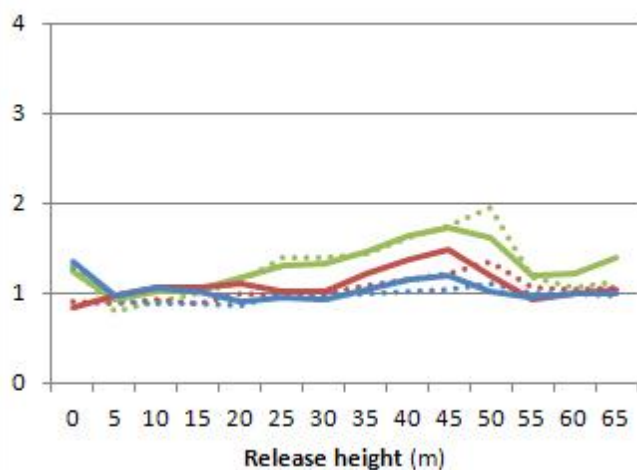
24-Hour



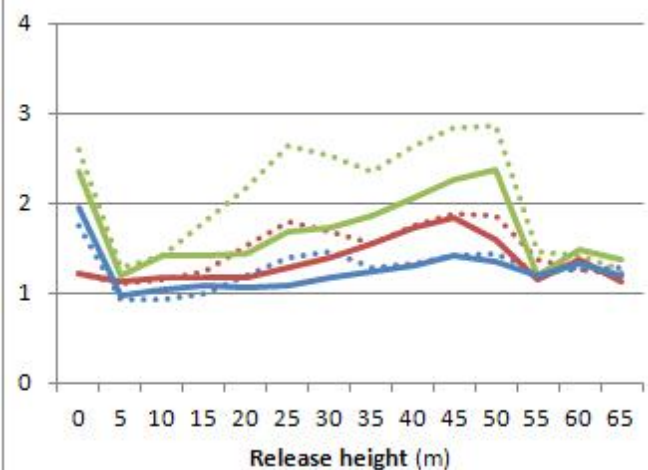
8-Hour



3-Hour



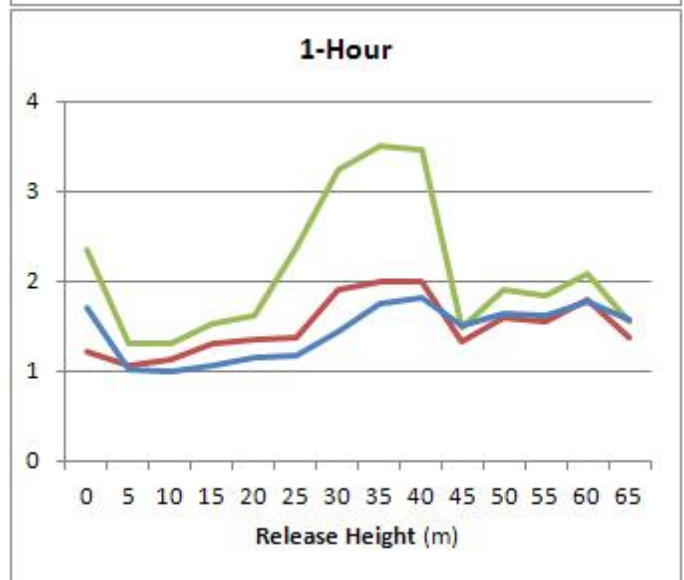
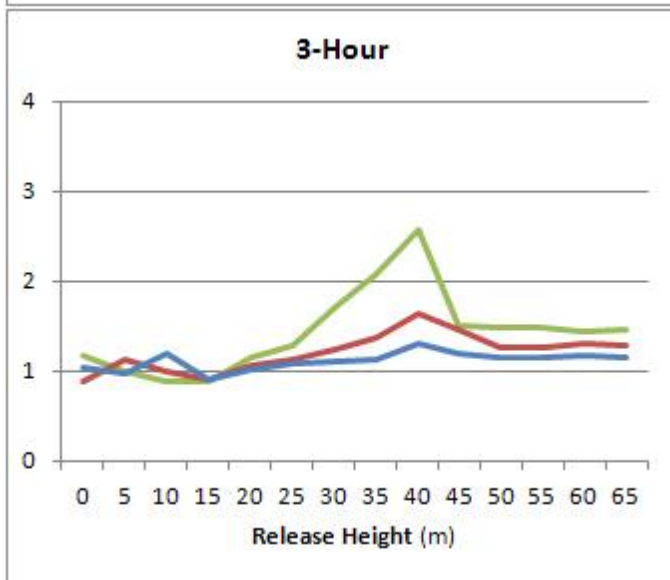
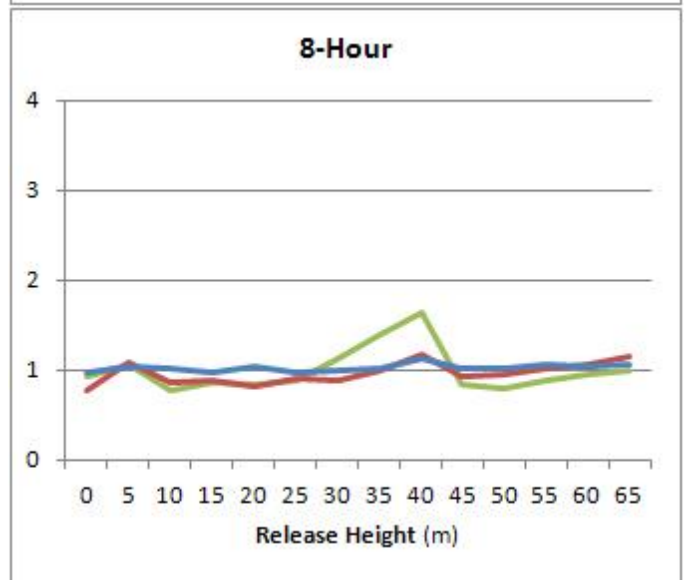
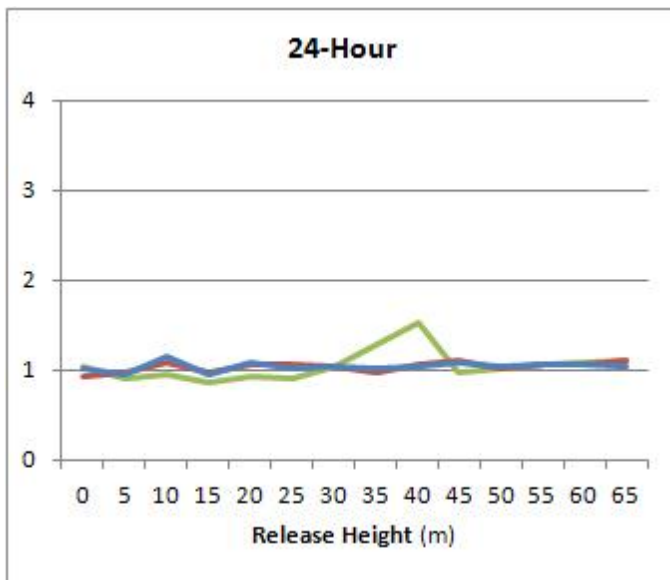
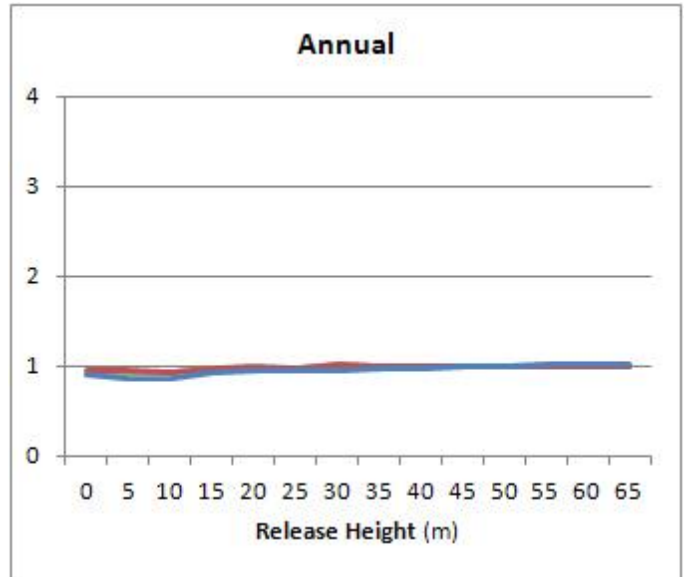
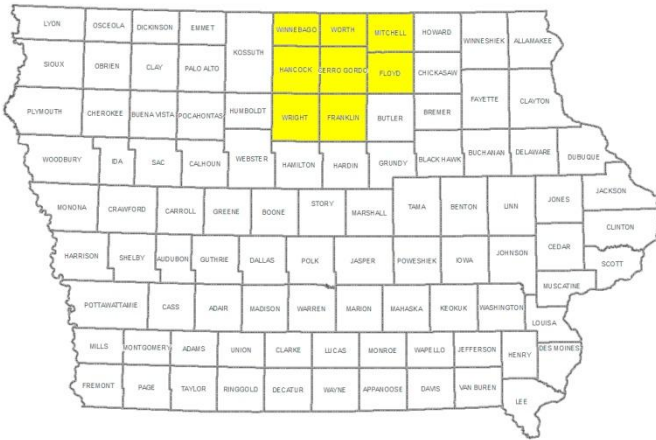
1-Hour



Source Type

— Point — Volume — Area

New Representative Site: Mason City
 Old Representative Site: Mason City



Source Type

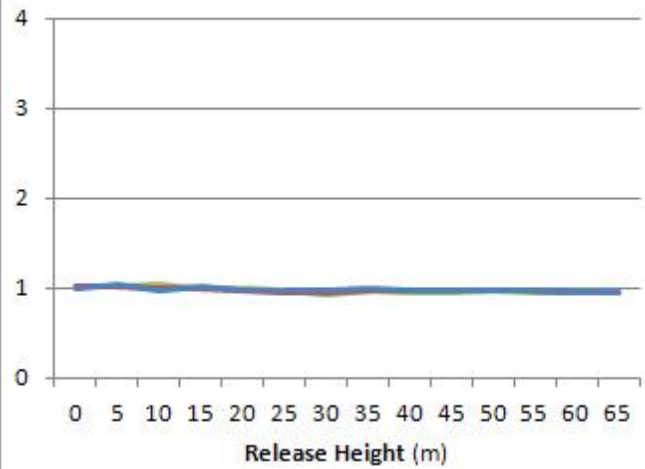
— Point — Volume — Area

New Representative Site: Moline

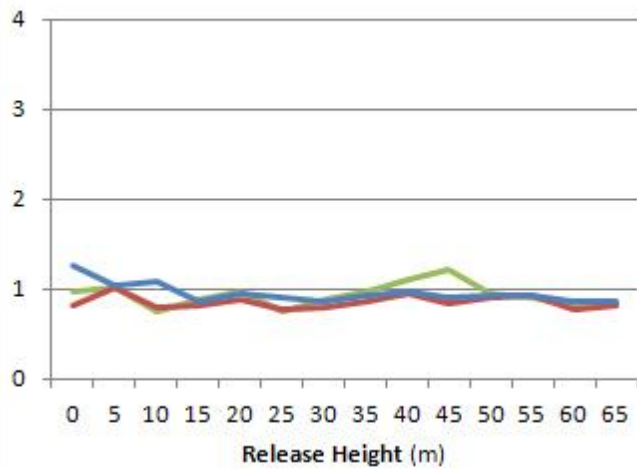
Old Representative Site: Moline



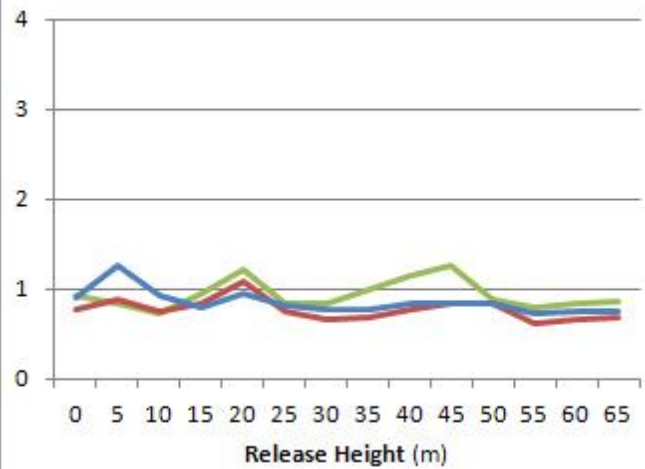
Annual



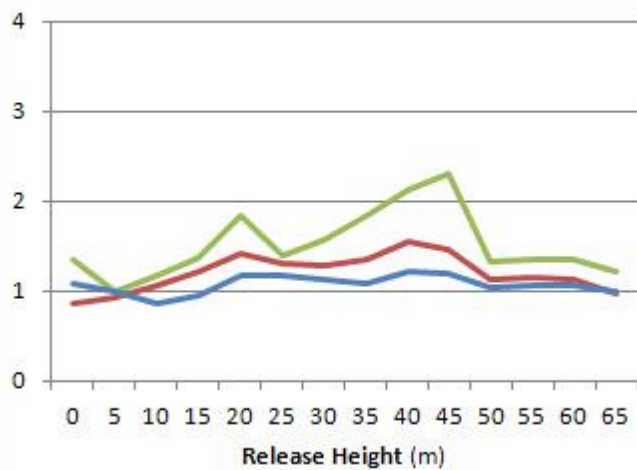
24-Hour



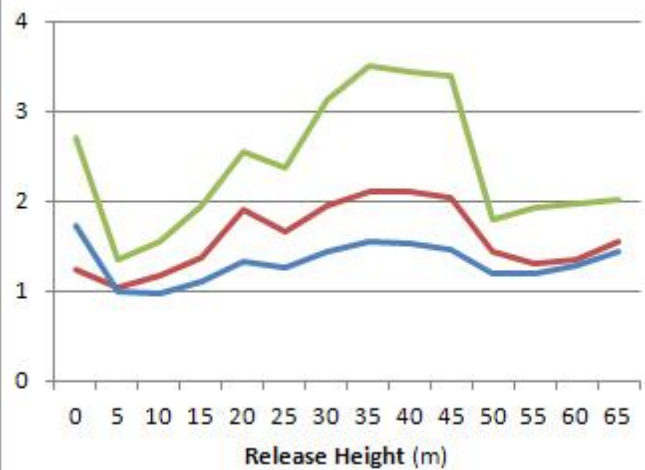
8-Hour



3-Hour



1-Hour

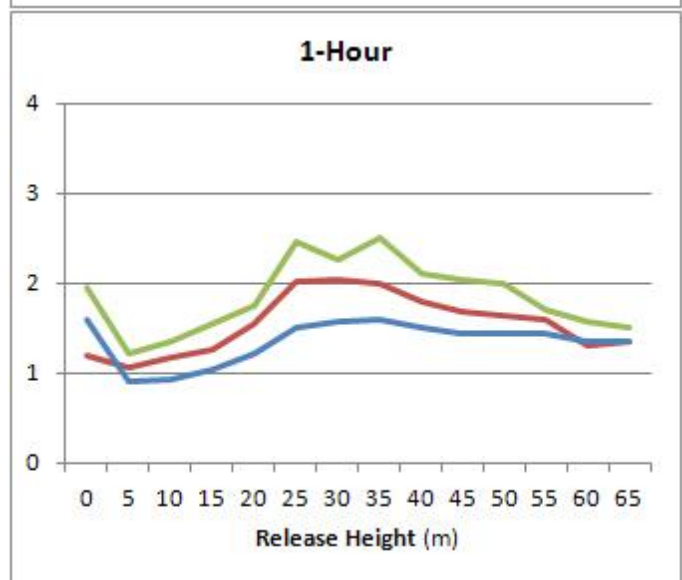
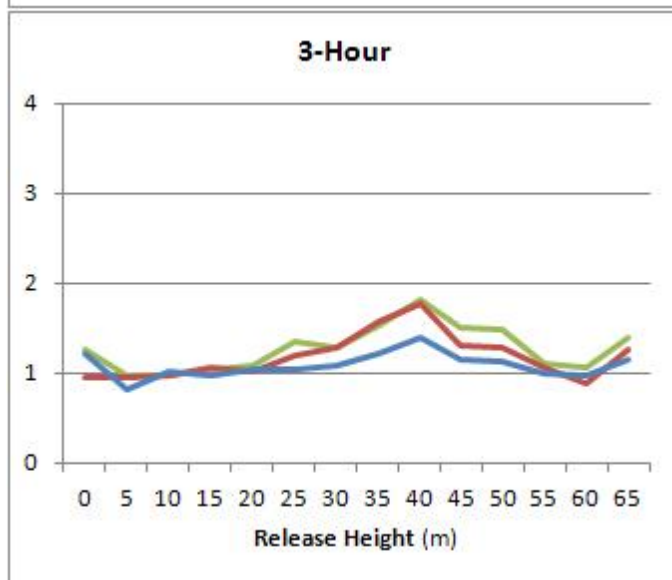
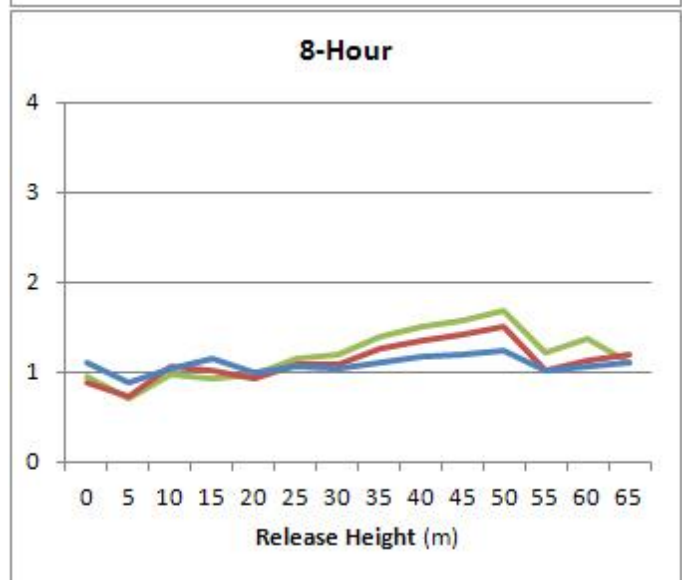
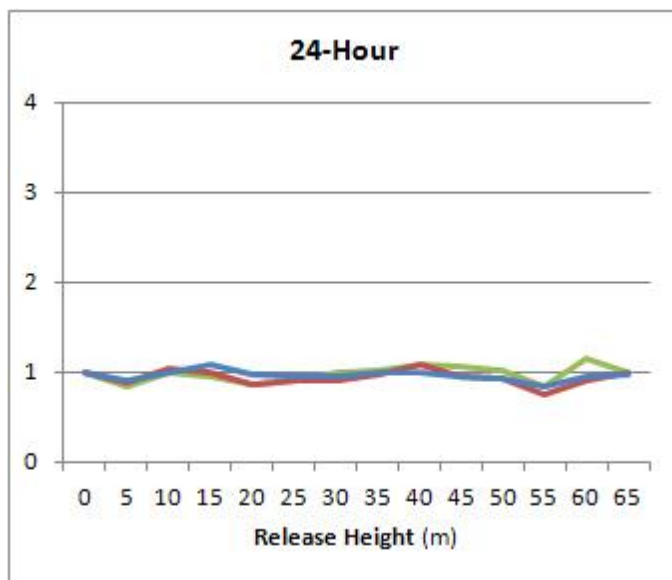
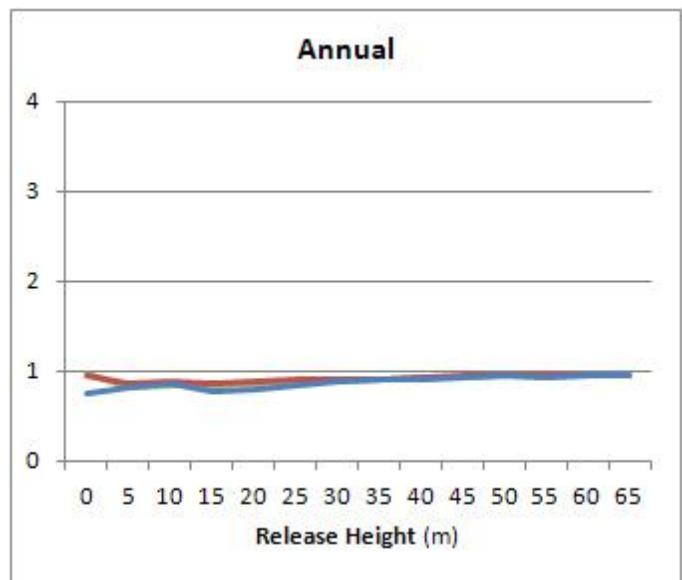


Source Type

— Point — Volume — Area

New Representative Site: Omaha

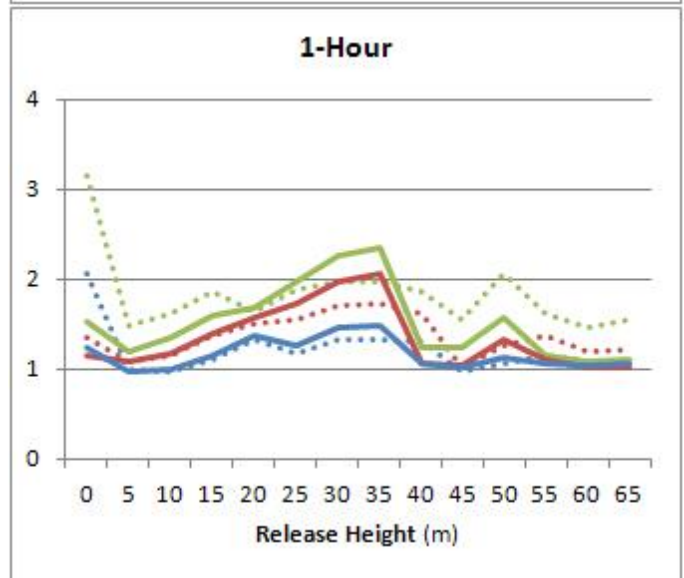
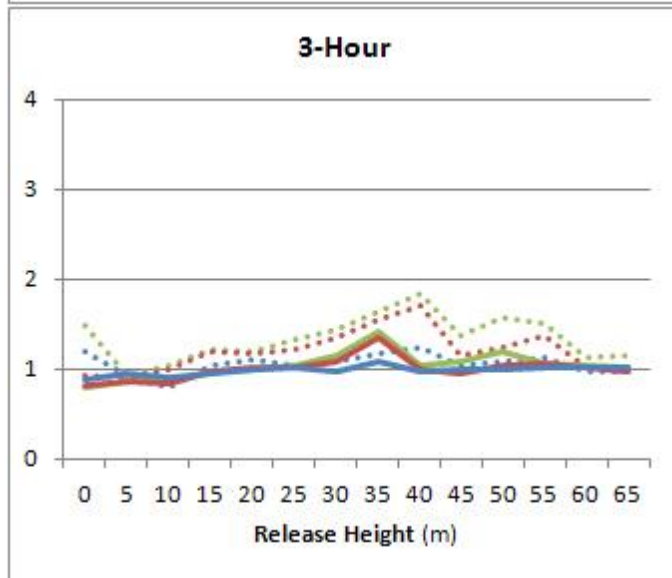
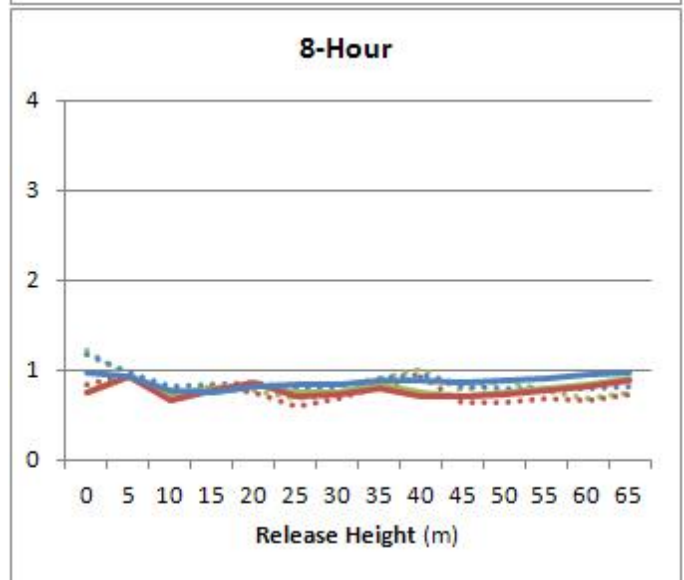
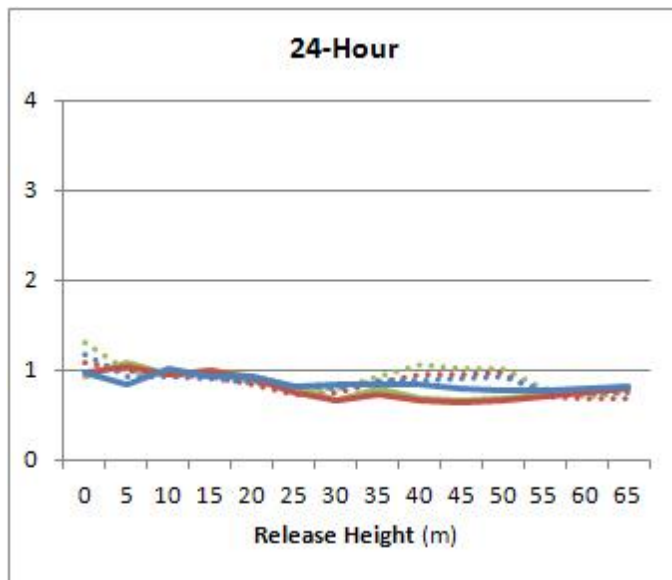
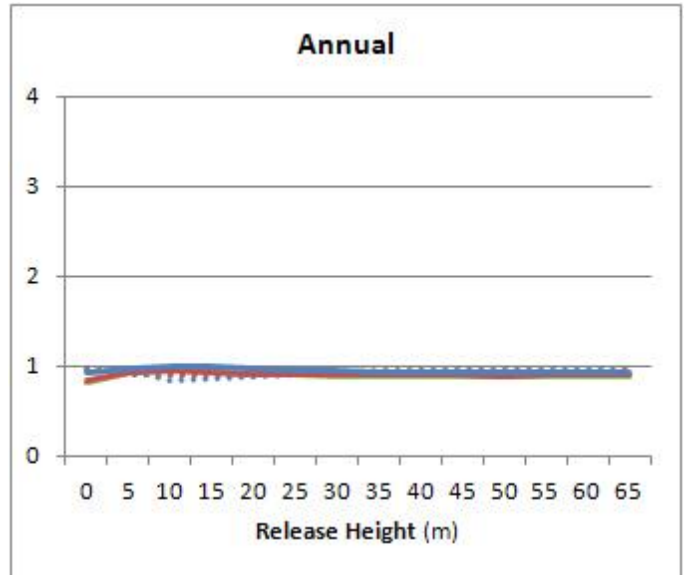
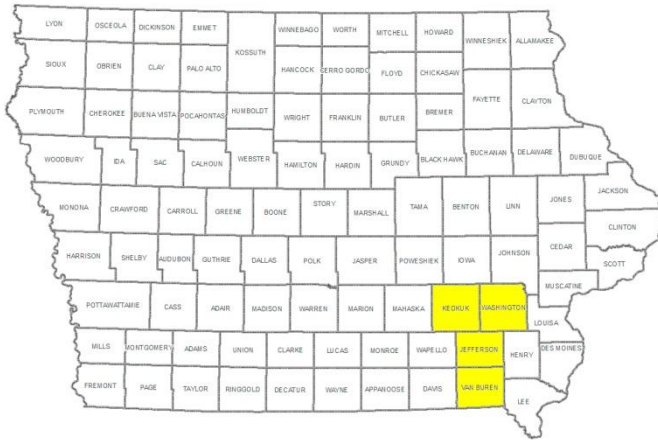
Old Representative Site: Omaha



Source Type

Point Volume Area

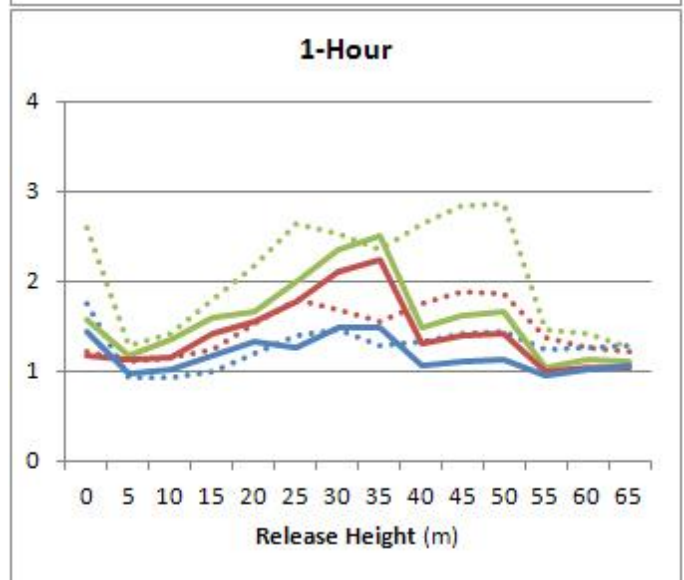
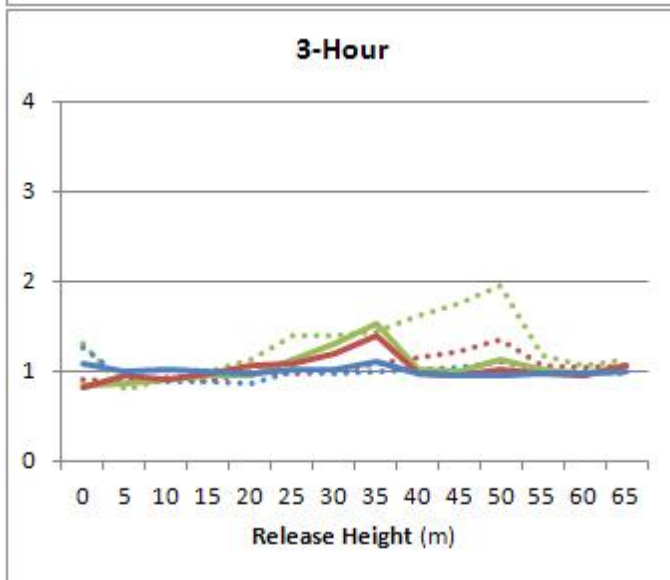
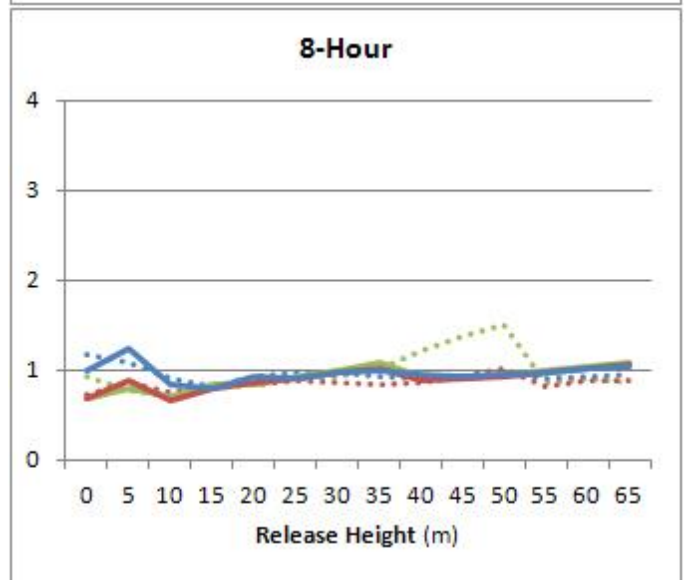
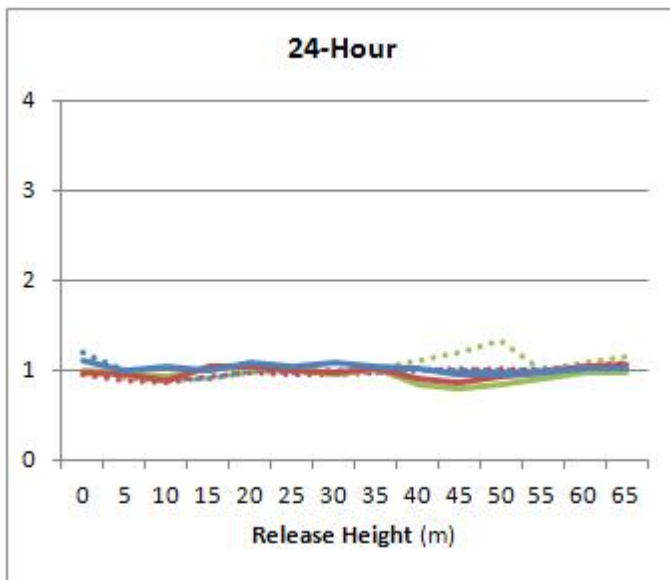
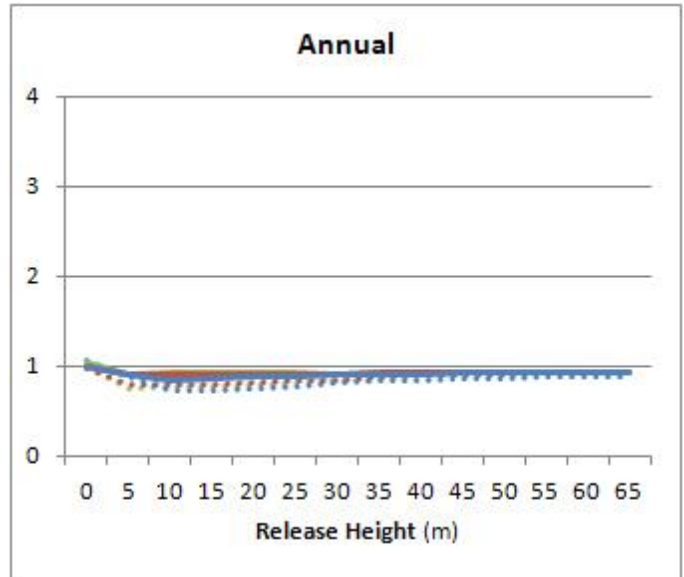
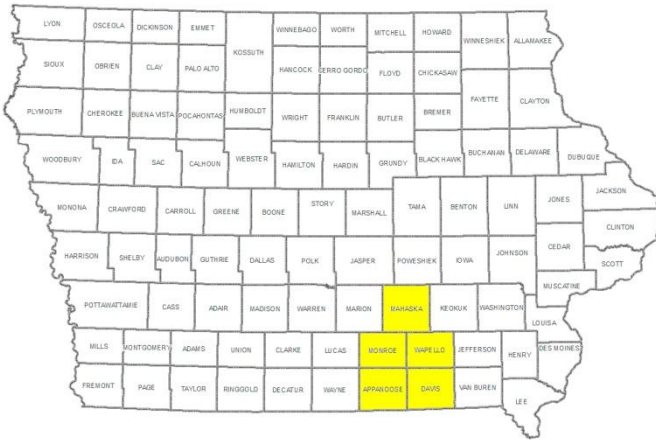
New Representative Site: Ottumwa
 Old Representative Site: Cedar Rapids



Source Type

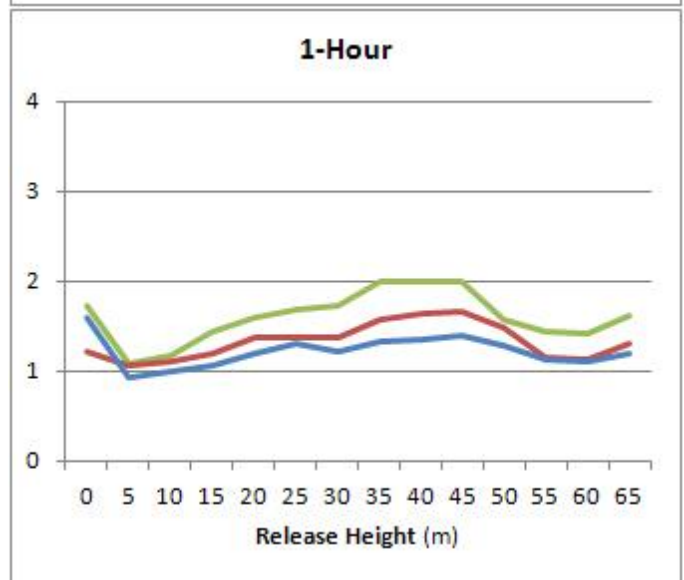
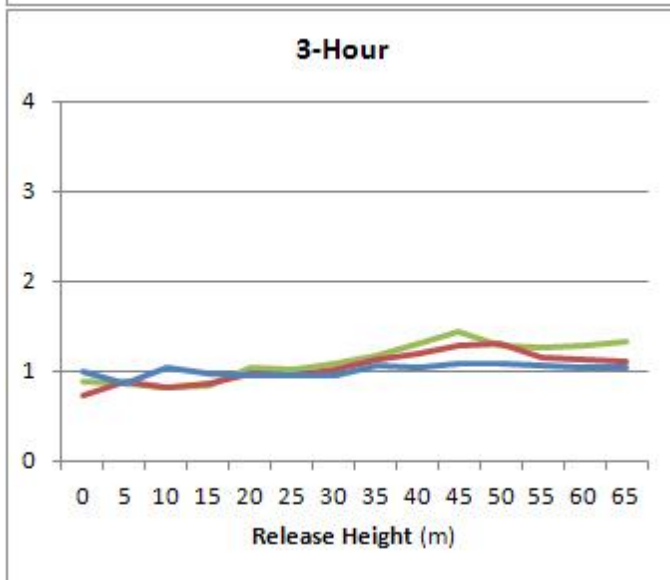
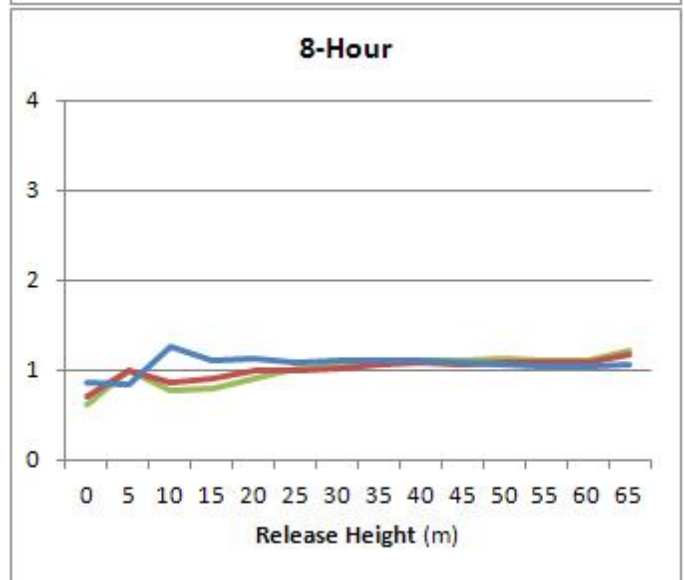
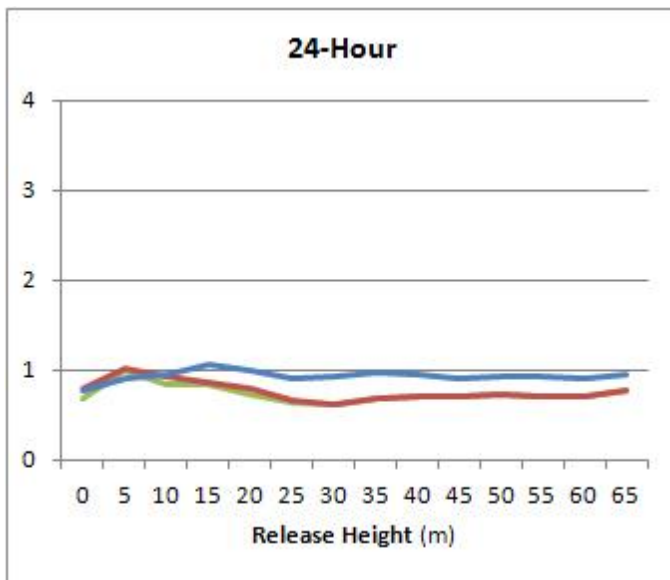
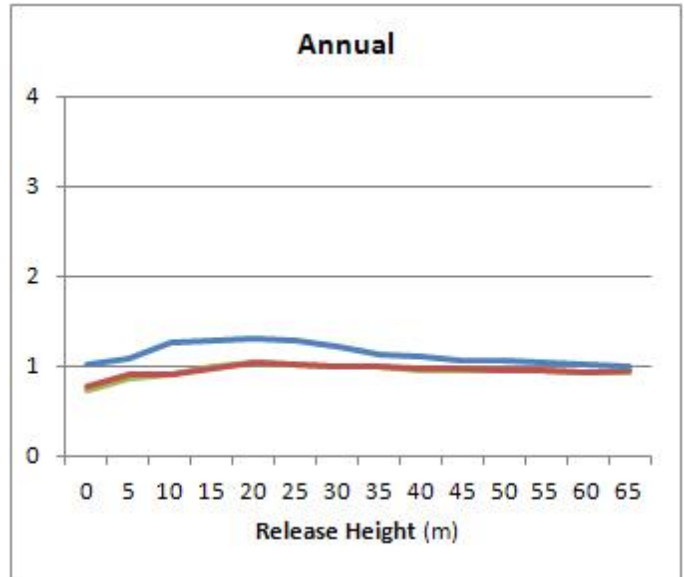
Point Volume Area

New Representative Site: Ottumwa
 Old Representative Site: Des Moines



Source Type
 — Point — Volume — Area

New Representative Site: Sioux City
Old Representative Site: Sioux City

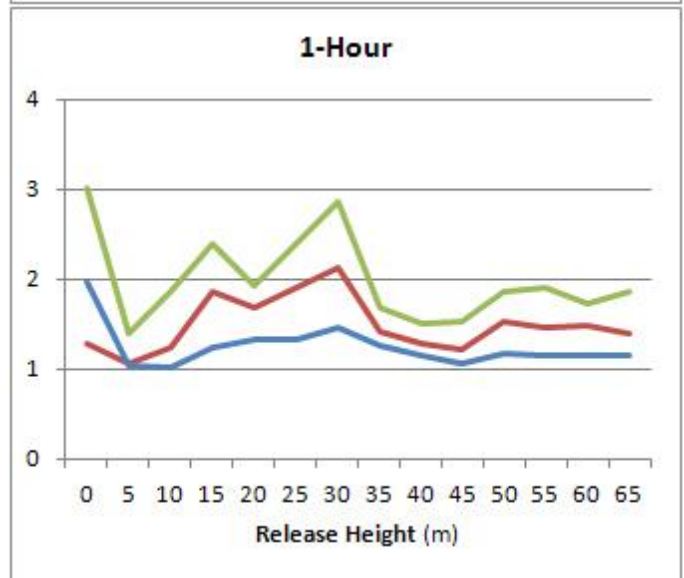
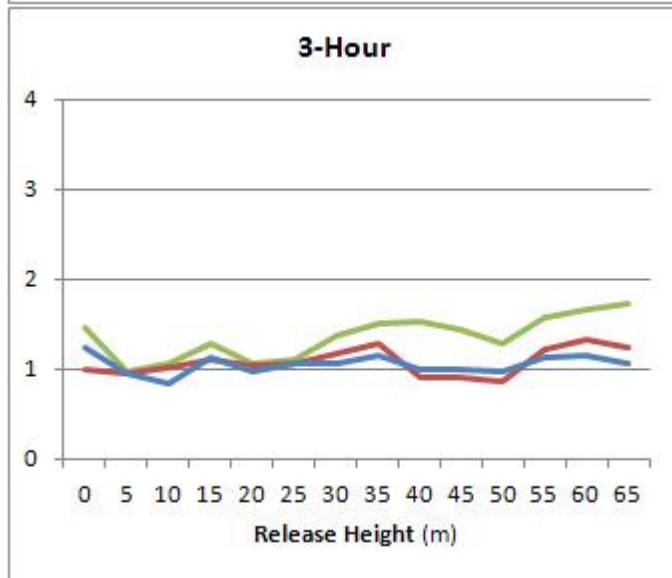
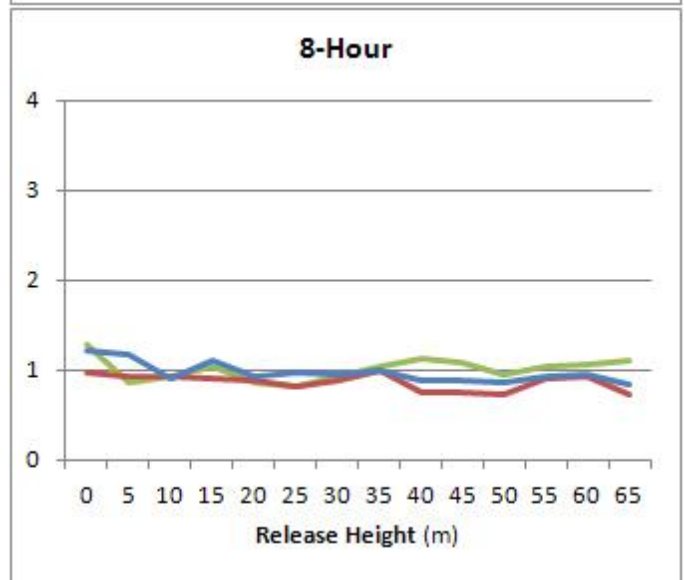
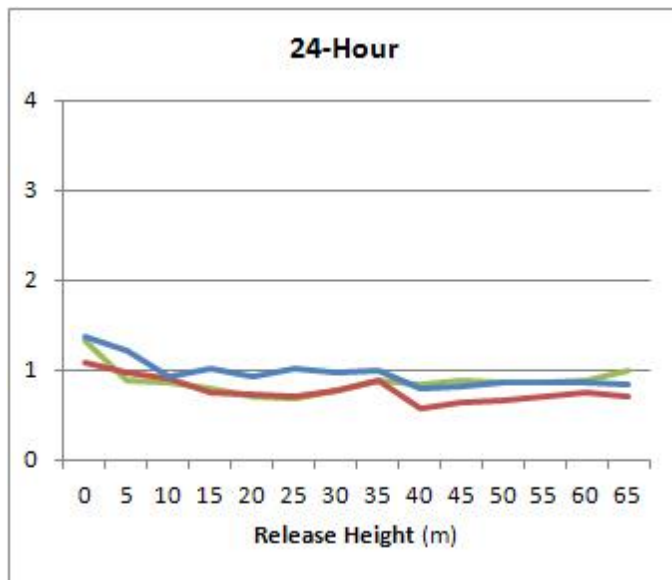
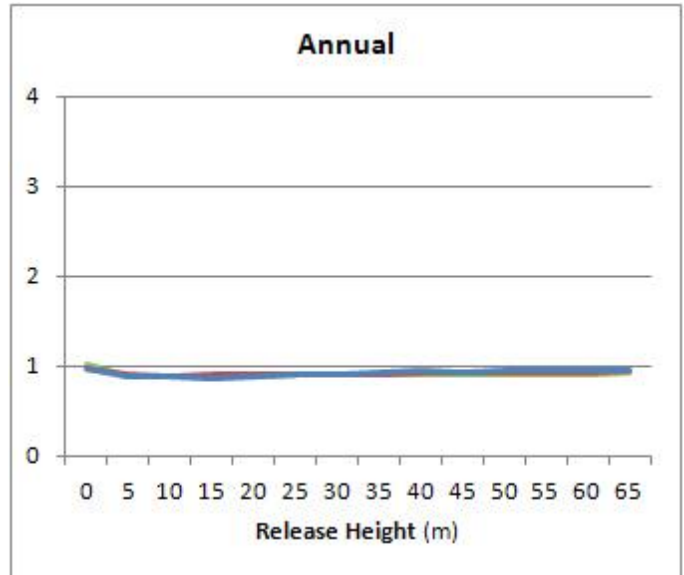


Source Type

Point Volume Area

New Representative Site: Sioux Falls

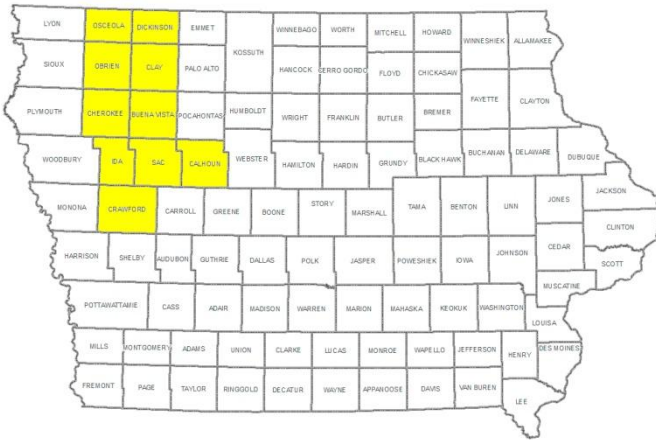
Old Representative Site: Sioux Falls



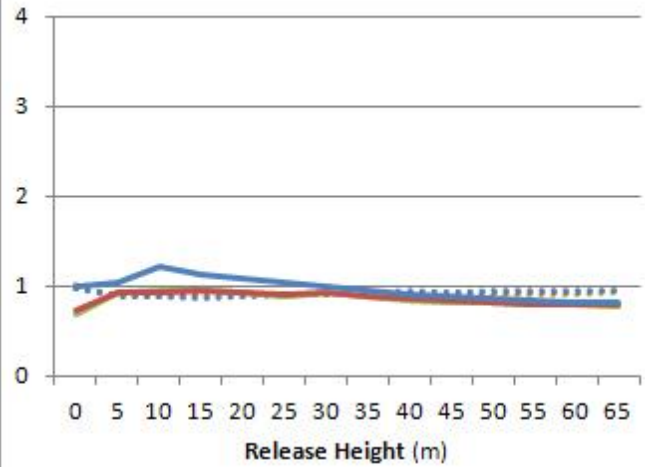
Source Type

— Point — Volume — Area

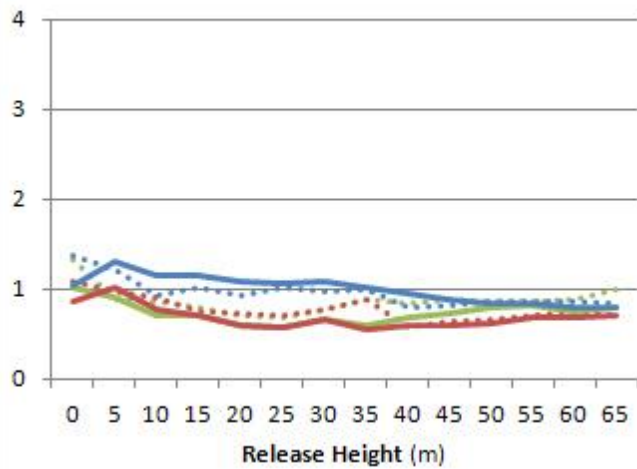
New Representative Site: Spencer
Old Representative Site: Sioux Falls



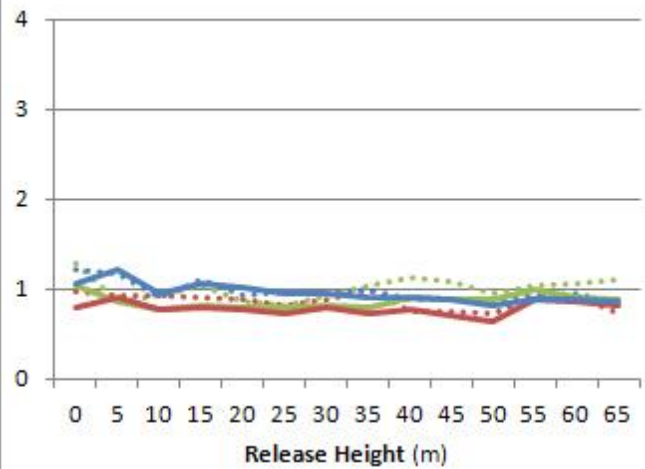
Annual



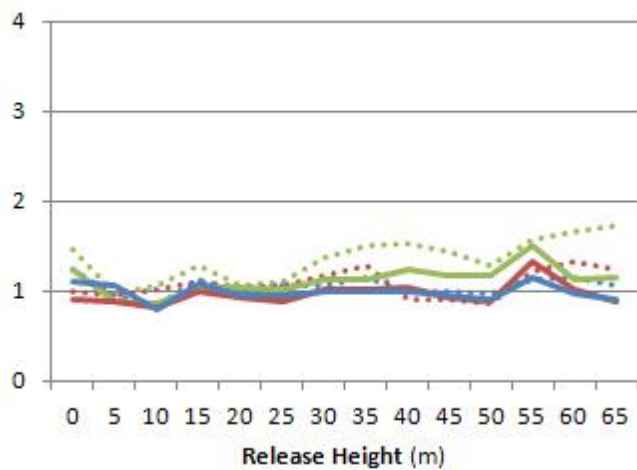
24-Hour



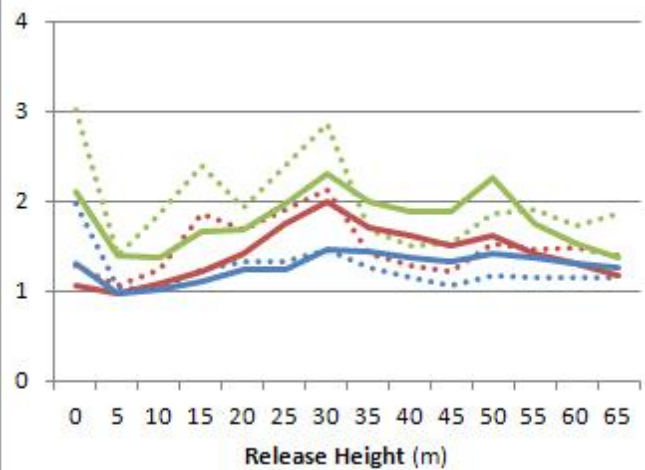
8-Hour



3-Hour



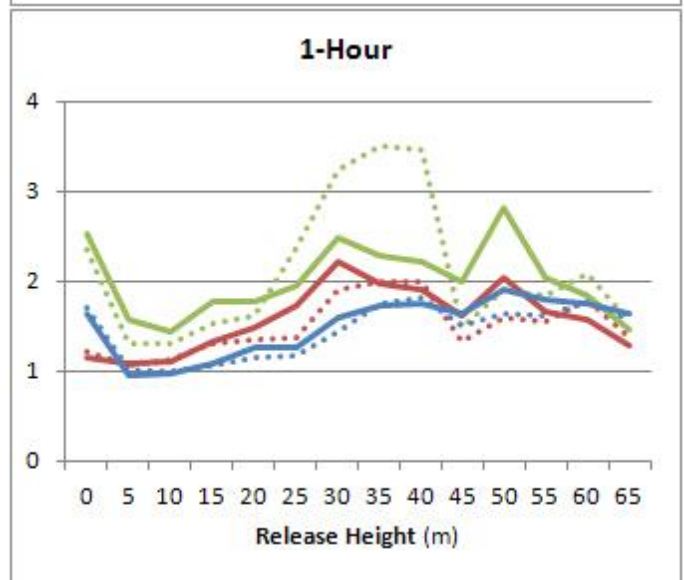
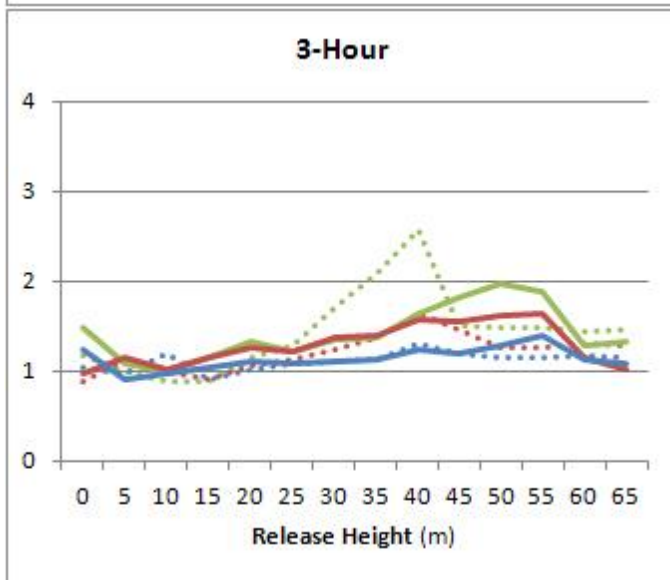
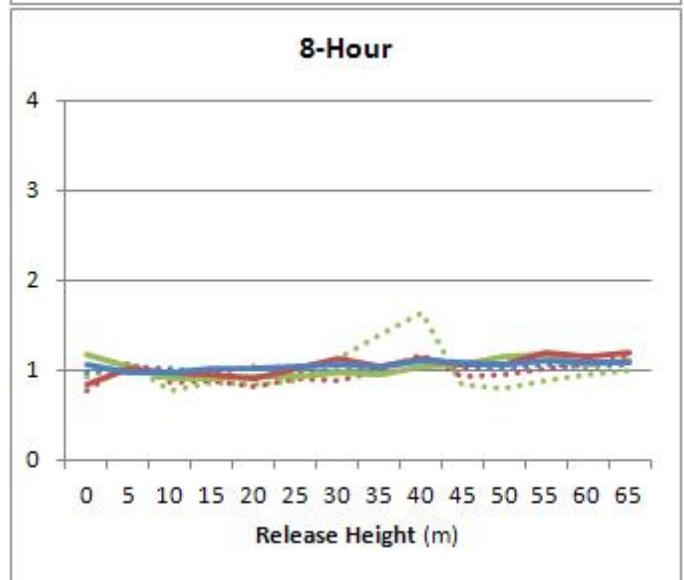
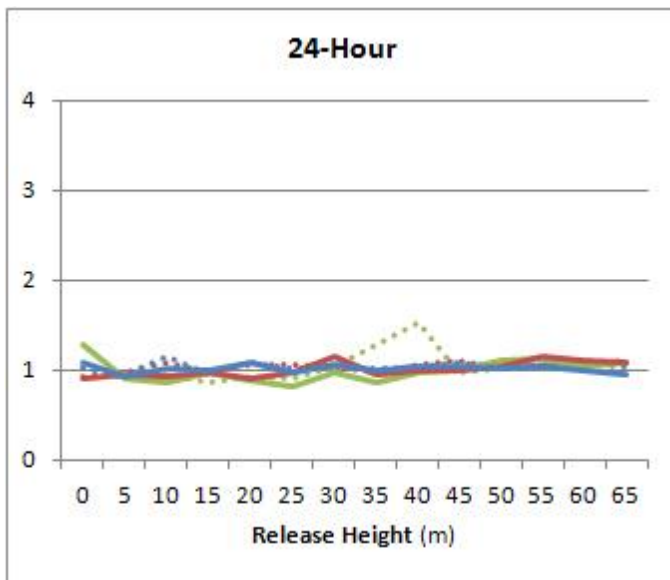
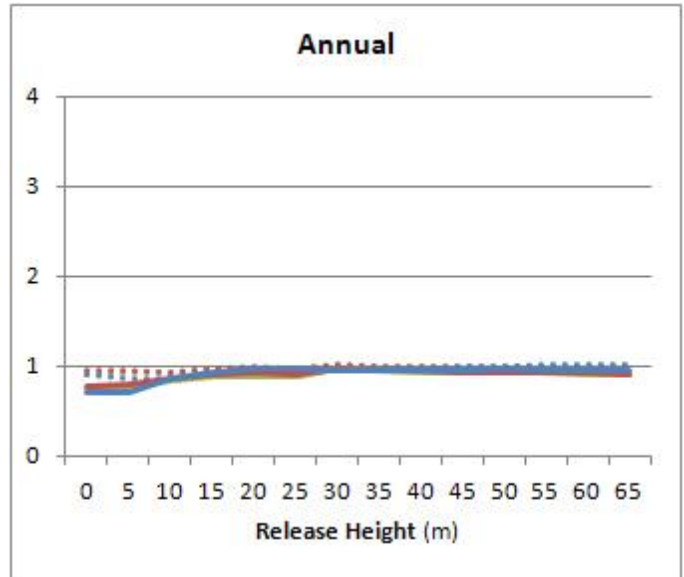
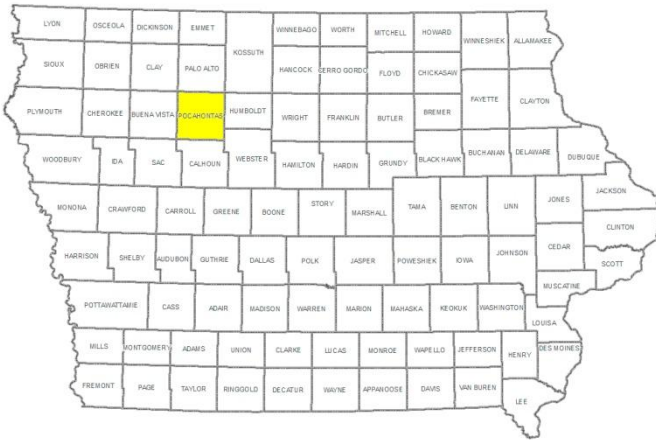
1-Hour



Source Type

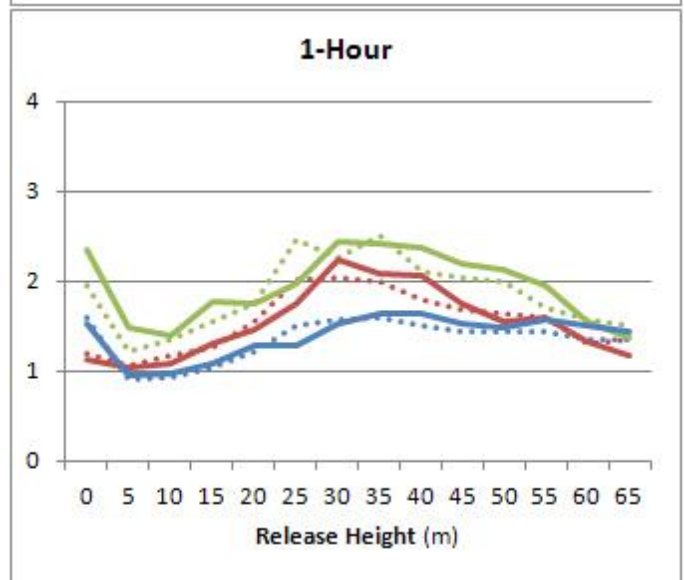
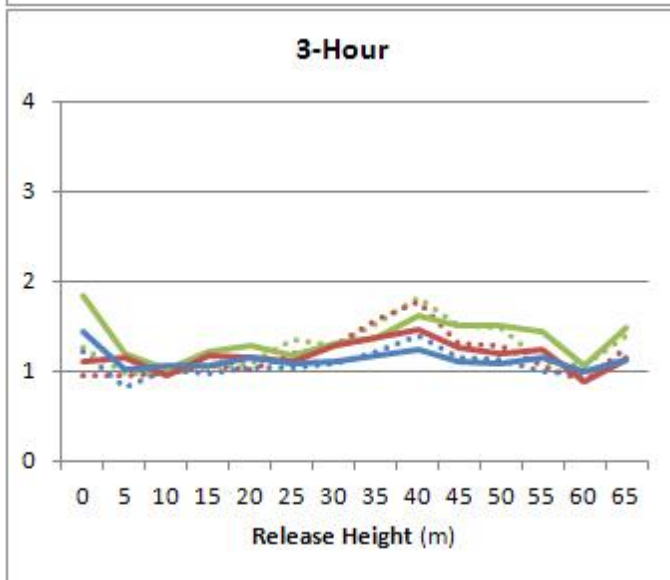
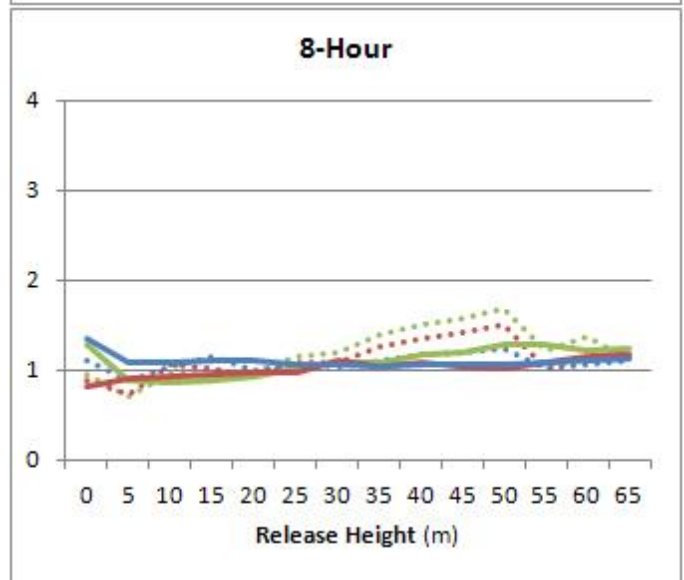
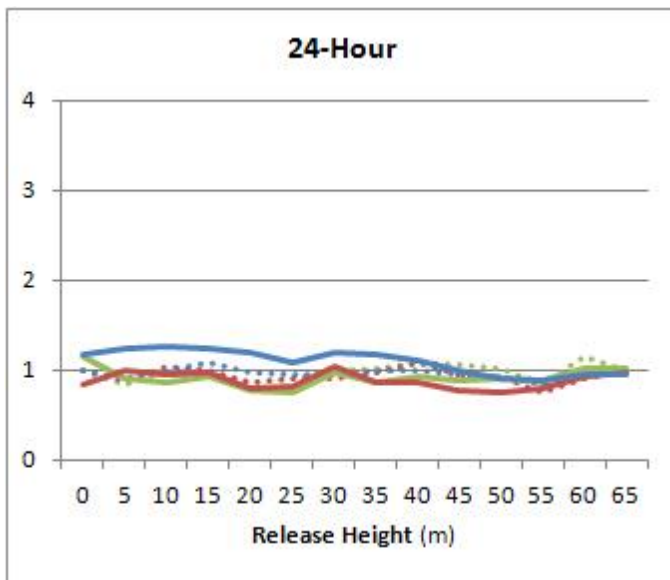
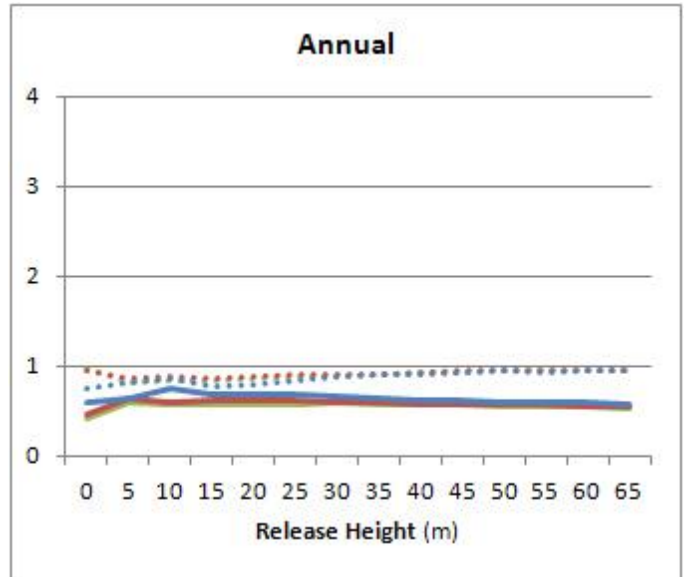
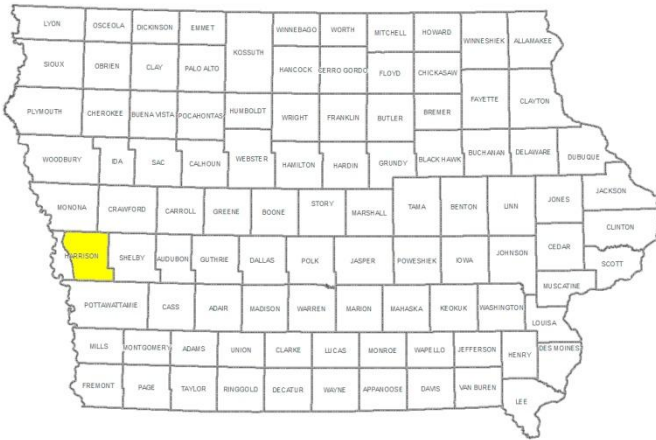
— Point — Volume — Area

New Representative Site: Spencer
 Old Representative Site: Mason City



Source Type
 — Point — Volume — Area

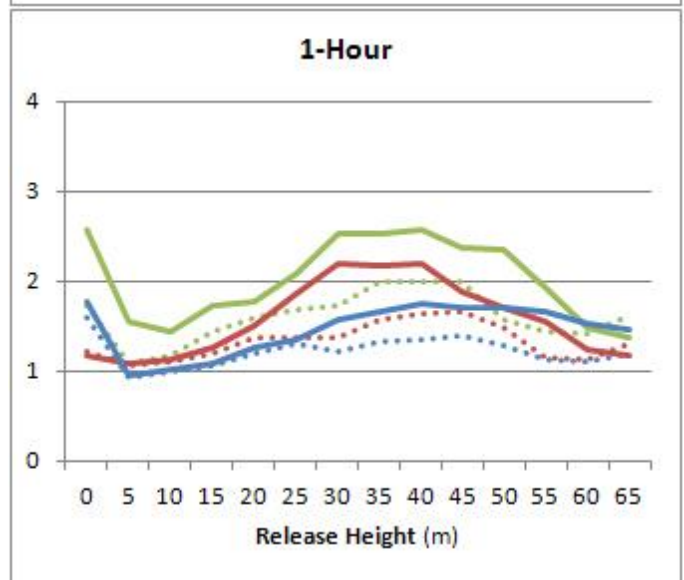
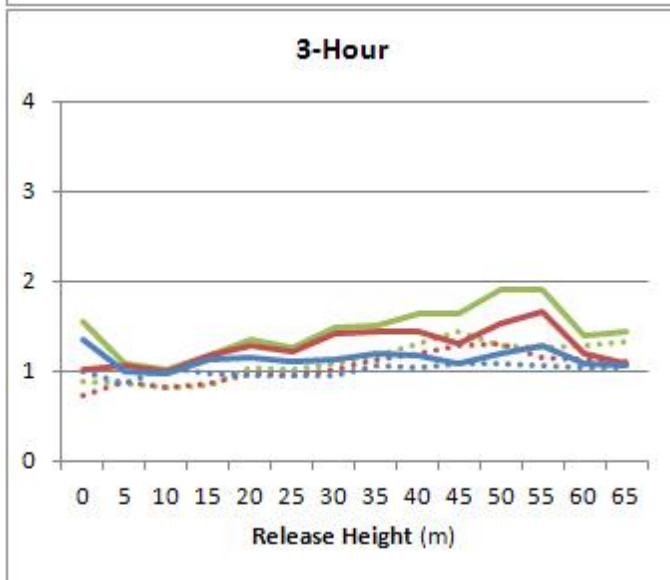
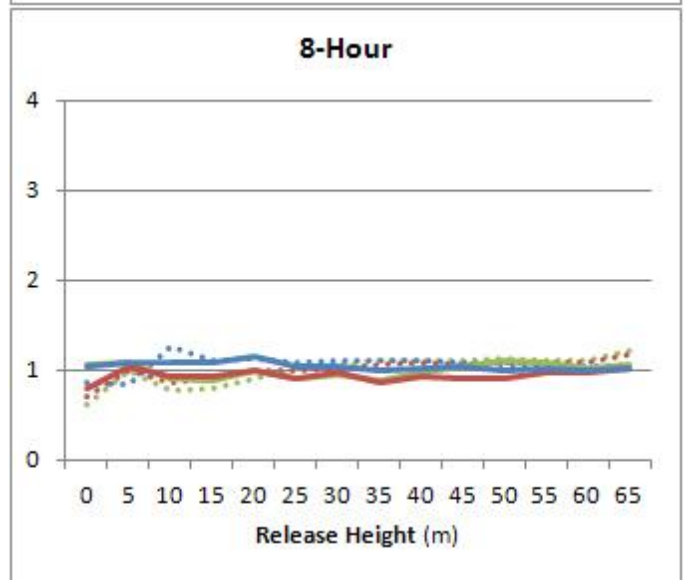
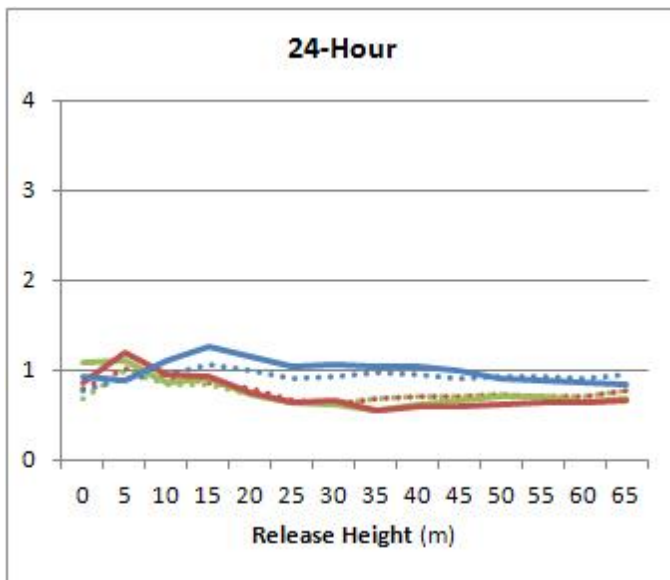
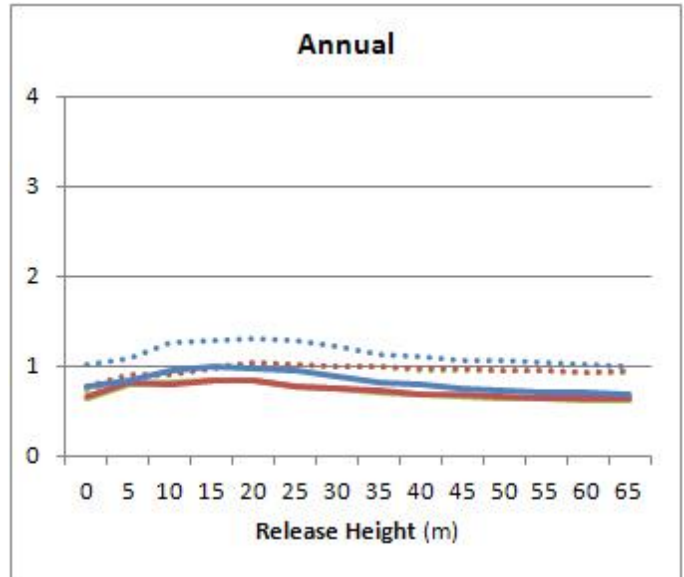
New Representative Site: Spencer
Old Representative Site: Omaha



Source Type

Point Volume Area

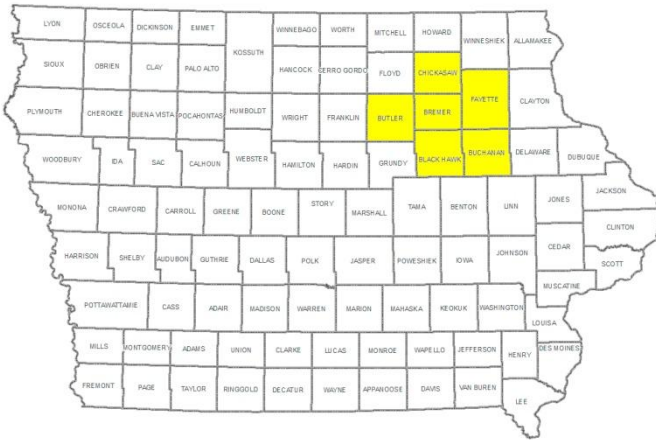
New Representative Site: Spencer
 Old Representative Site: Sioux City



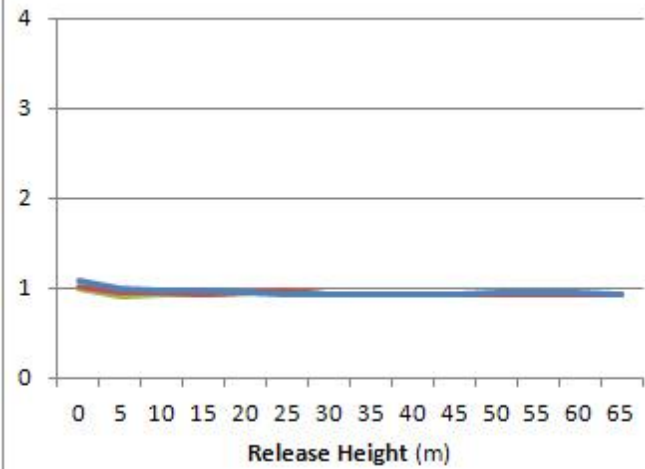
Source Type
 — Point — Volume — Area

New Representative Site: Waterloo

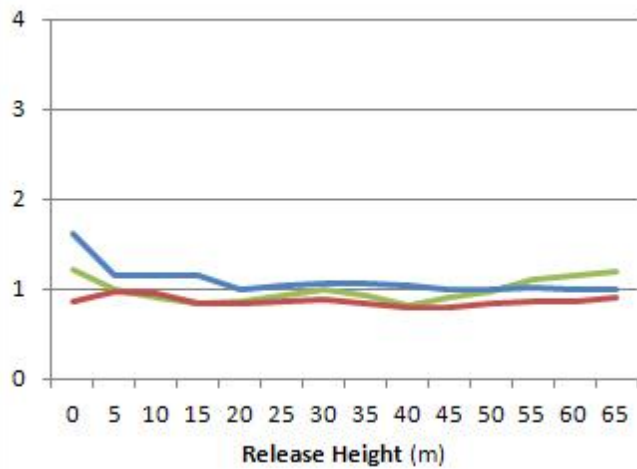
Old Representative Site: Waterloo



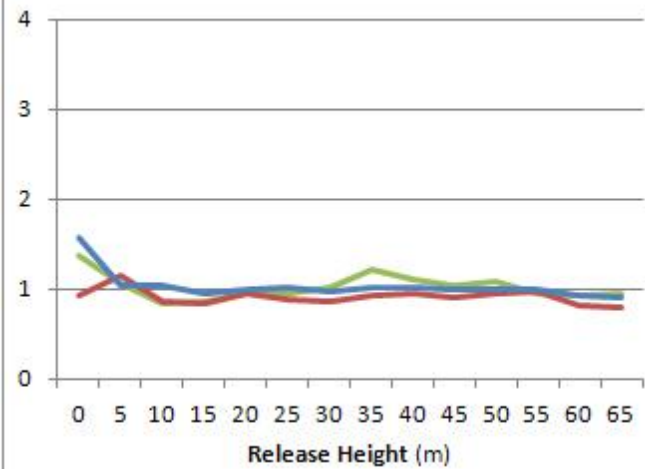
Annual



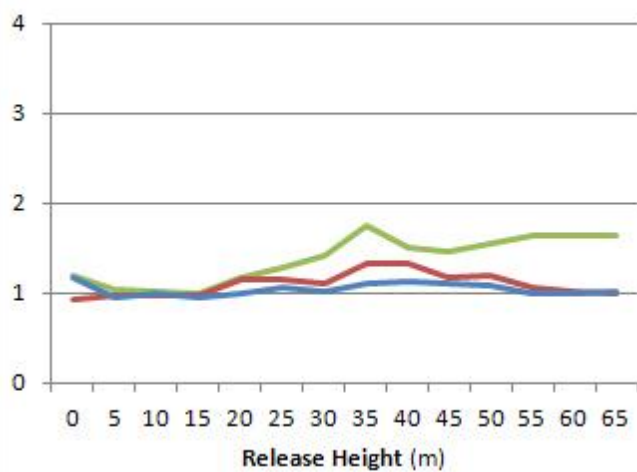
24-Hour



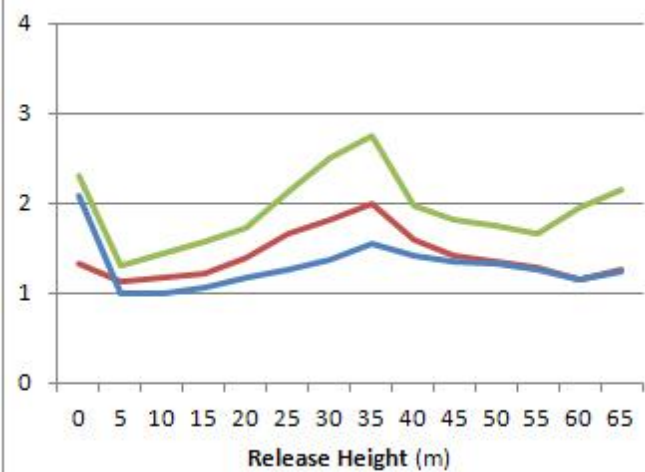
8-Hour



3-Hour



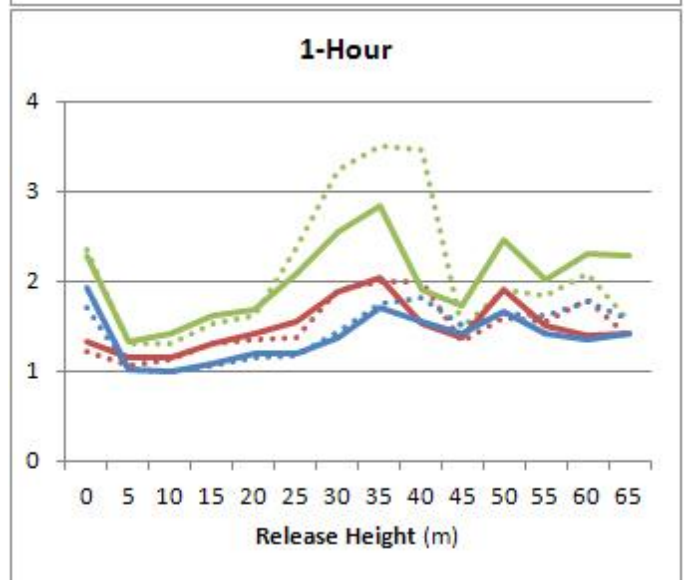
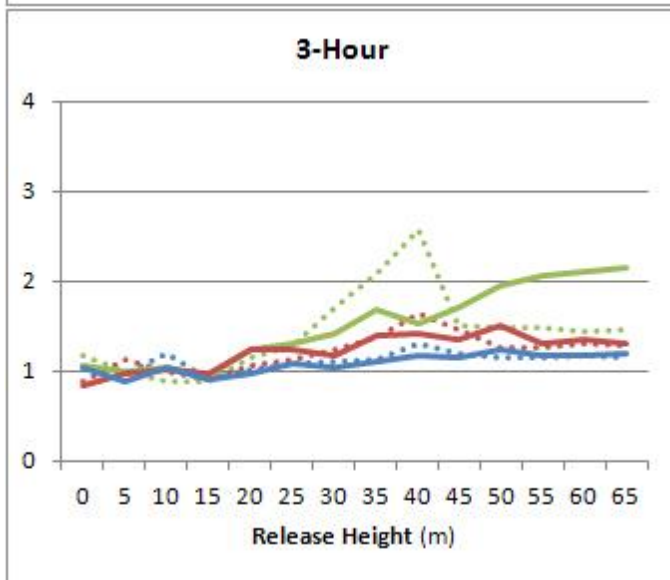
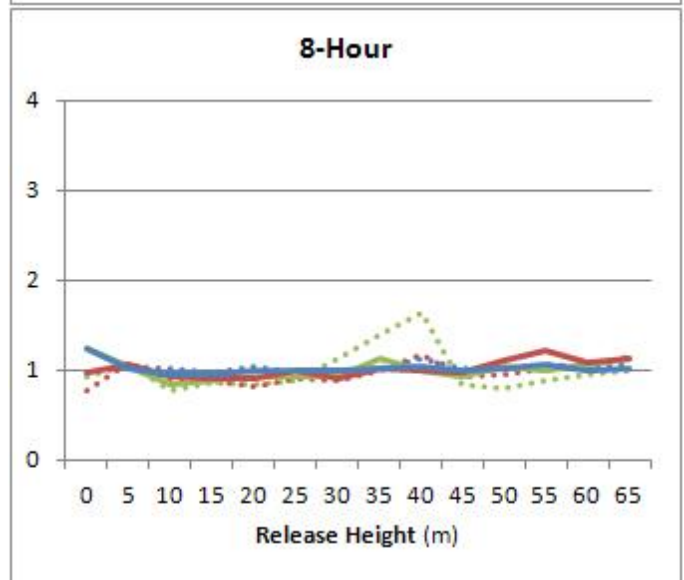
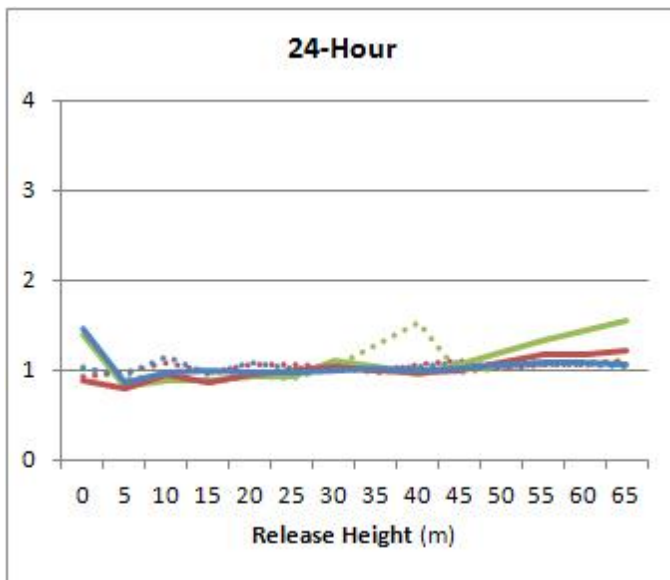
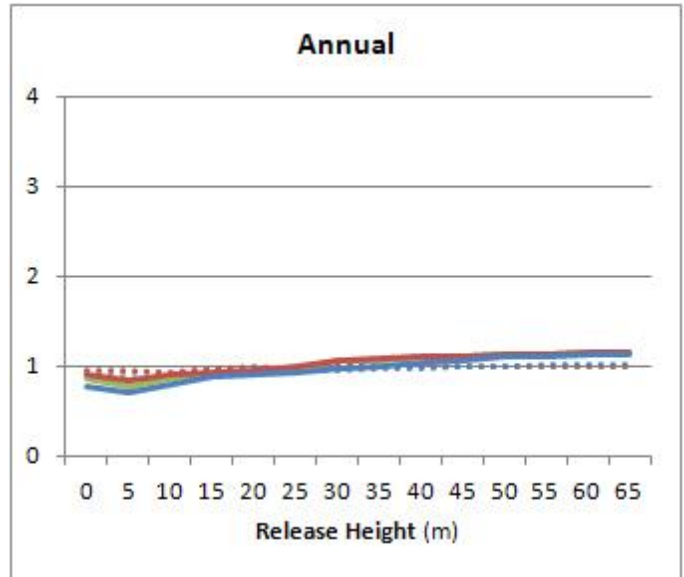
1-Hour



Source Type

— Point — Volume — Area

New Representative Site: Waterloo
 Old Representative Site: Mason City



Source Type
 — Point — Volume — Area